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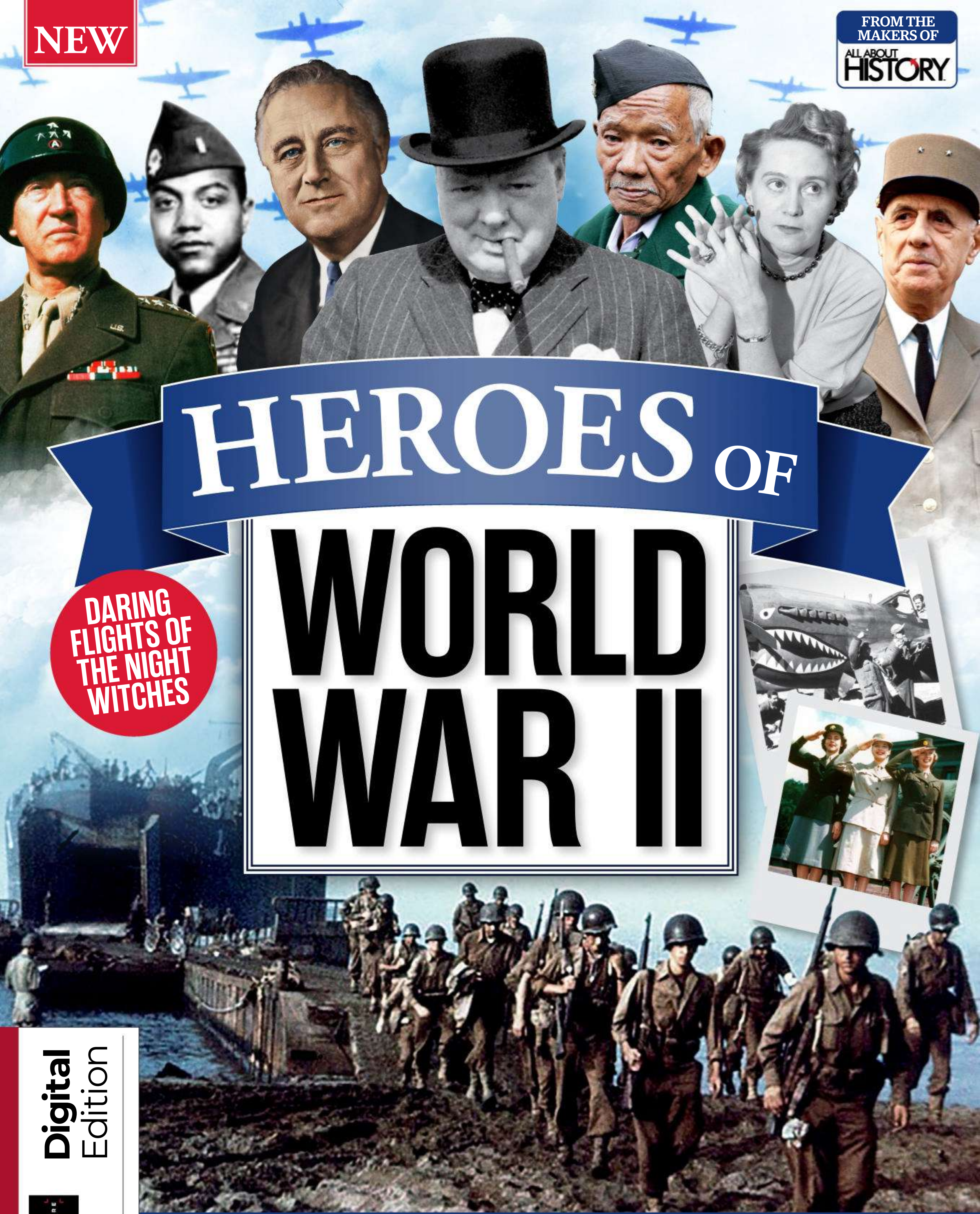
HEROES OF WORLD WAR II



DARING FLIGHTS OF THE NIGHT WITCHES

Digital Edition

FUTURE

FOURTH EDITION

COMMANDERS • SPIES • THE RESISTANCE • TROOPS • DUNKIRK

HEROES OF WORLD WAR II

When we consider the heroes of World War II, it's often 'The Few' that spring to mind. But beside the brave pilots of the Battle of Britain stood many more heroes, some more well known than others. Infantry, navy, and special forces all had a role to play too, and so did the ground crews, medics and technical specialists who supported them. Spies, code breakers and tacticians gave the armed forces the information they needed to effectively combat the Axis powers and defend against them. They were aided by resistance operatives who smuggled agents and civilians to safety, gathered valuable intelligence, and engaged in guerilla warfare behind enemy lines. These brave men and women, and many more, were all heroes of World War II, and over the following pages we explore some of their stories of courage, valour, and fortitude.

FUTURE

HEROES OF WORLD WAR II

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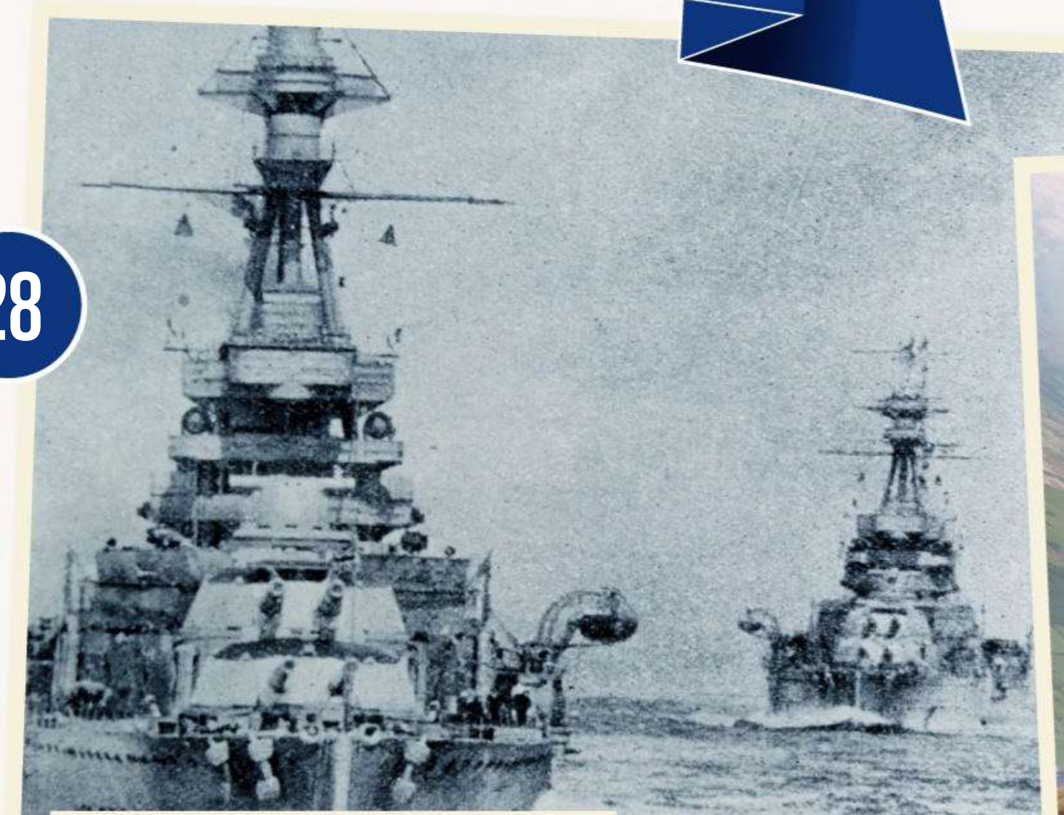

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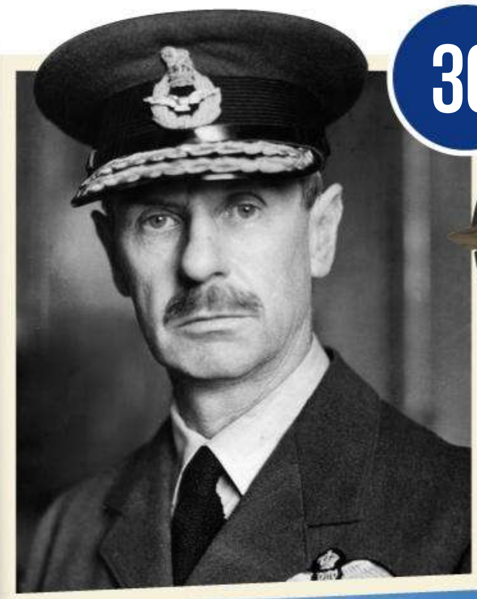
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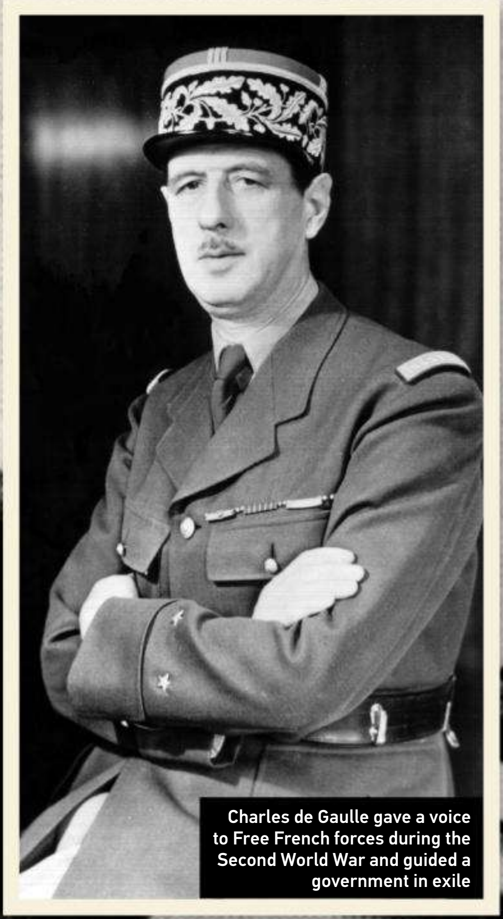
Oskar Schindler's life offered no clues that he would one day be hailed as a hero who saved hundreds of lives

Throughout the Blitz, Winston Churchill refused to abandon Whitehall for safer locations outside of London

HEROIC LEADERS OF WWII

It is sometimes said that leaders in war tend to lead from the rear, but sometimes they find themselves in risky situations

WORDS **BEN GAZUR**



Charles de Gaulle gave a voice to Free French forces during the Second World War and guided a government in exile

Winston Churchill had something of a reputation for bravado and a love of derring-do. In the First World War, he had served on the Western Front under heavy shelling for months. When he came to lead the United Kingdom in the Second World War, he was not content to sit behind his desk.

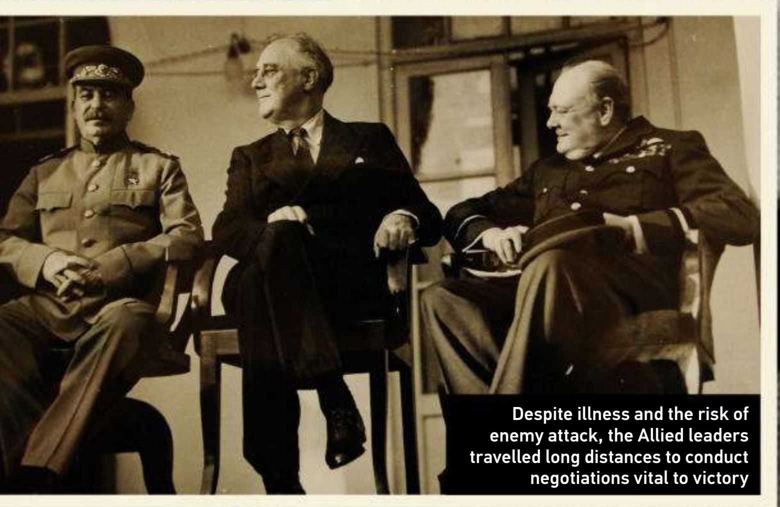
When the German air force blasted London with bombs during the Blitz, Churchill could often be found on the roofs of Whitehall watching the planes deliver their devastating payloads. When it was suggested that the British Government should be moved to somewhere outside of London, he was adamant they should stay to face the same perils as the people.

Churchill also believed strongly in conducting business face-to-face. In all, he made 25 journeys outside of Britain during the war, often against the advice of those who were concerned about his safety. Despite the dangers of air travel in general, and with the threat of German aerial might in particular, he visited other leaders across several continents. Churchill almost landed with the troops invading France on D-Day. He was only stopped by King George VI, who insisted that if Churchill went then he would go too.

During the Battle of France at the beginning of the war, Charles de Gaulle was unable to stop the German advance, despite conspicuously exposing himself to danger in the field. With the fall of France looming, de Gaulle moved to London to help lead the Free French forces. He travelled widely to rally support despite his life being put in danger. The leader of the Free French had an often fractious relationship with other Allied leaders but he put himself at risk by returning to Algeria to continue the fight of French forces in Africa.

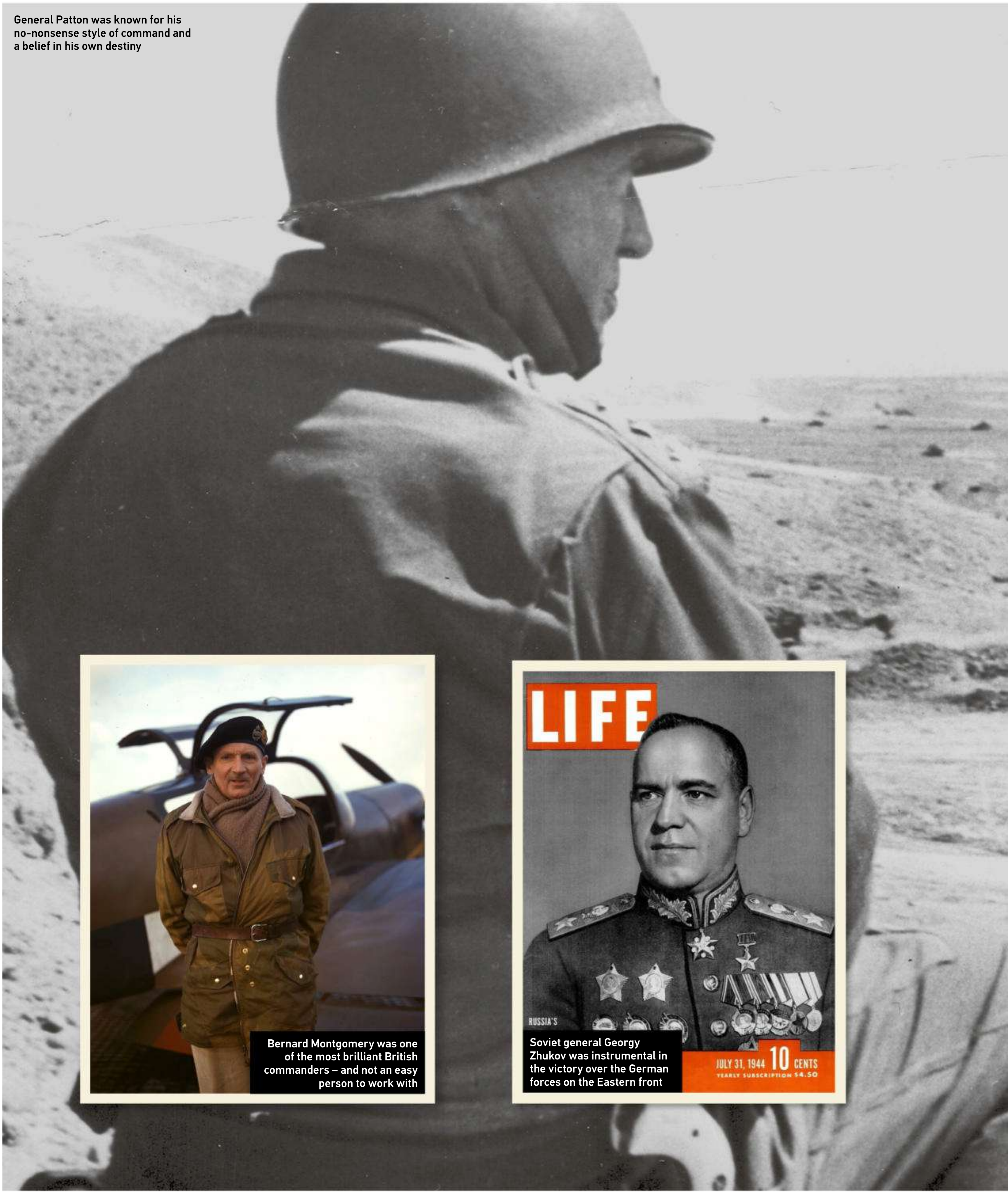
Not all bravery requires facing down enemies in direct combat, however. Franklin Roosevelt, president of the United States, had to overcome his own body during the Second World War. Having suffered a debilitating illness in 1921 Roosevelt was left permanently paralysed from the waist down. In public, he supported himself with his arms but in private used a wheelchair. Despite his physical setbacks, Roosevelt worked tirelessly throughout the war to defeat fascism.

In 1943, Roosevelt became the first US president to use a plane for official business when he made a long journey to meet with Winston Churchill. Roosevelt would also travel to Iran, and later Yalta, to meet with Stalin and Churchill despite the risks to his health and the possibility of attack.



Despite illness and the risk of enemy attack, the Allied leaders travelled long distances to conduct negotiations vital to victory

Image: Getty Images, Wikimedia Commons



General Patton was known for his no-nonsense style of command and a belief in his own destiny

Bernard Montgomery was one of the most brilliant British commanders – and not an easy person to work with

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Soviet general Georgy Zhukov was instrumental in the victory over the German forces on the Eastern front

BRAVE BATTLE COMMANDERS

World War 2 saw new ways of fighting, and those commanders who fought to win had to come up with new strategies

WORDS **BEN GAZUR**

The Second World War was fought on such a large scale that no one person could possibly control a whole country's forces. On battlefields around the world, generals and admirals had to confront new tactics and weapons with boldness, bravery and wits.

General George S Patton was one of the main proponents of the use of tanks in warfare. Before the war, he was placed in charge of the 2nd Armored Division. To fully master tank warfare, he would send his 1,300 tanks on exercises while observing them from a plane he was piloting himself. Sent to Africa in 1942, Patton's forces were instrumental in capturing Casablanca and other targets. While he was arguing that he needed more air support, Patton's office came under German air attack, the roof falling in around him, proving his point.

It was during the Sicily campaign that Patton really made his name as a heroic commander, personally leading the Seventh Army into battle. Later at Normandy, Patton led his forces in breakout attacks that shattered the enemy lines. His tanks often outstripped the rest of the invading force as they pushed further towards and then into Germany.

Other American generals showed their bravery during the battles in Europe, too. When General McAuliffe found his forces surrounded during the Battle of the Bulge his opponents sent messengers to ask for his surrender. McAuliffe's reply to this demand has gone down in history: "Nuts!" McAuliffe's forces held their position under fire until reinforcements arrived.

General Bernard Montgomery was not an easy person, as his German foes in North Africa would soon learn. Churchill said of Montgomery that he was, "In defeat, unbeatable; in victory, unbearable." When placed in charge of the forces ranged against Rommel, he was noted for appearing everywhere the soldiers were to boost morale and oversee preparations. After winning in North Africa, Montgomery was instrumental in the invasion of Europe from Normandy.

General Georgy Zhukov had one of the hardest jobs of all the Allied commanders – he not only had to control troops, but he also had to survive the attentions of Stalin. When Stalin once lambasted Zhukov for not telling him what was going on, the general stood up to him, saying, "Comrade Stalin, our duty is first of all to help the front commanders and only then to inform you."

There are countless examples of commanders acting with unflappable bravery under fire during the Second World War and inspiring their men to fight on to victory.

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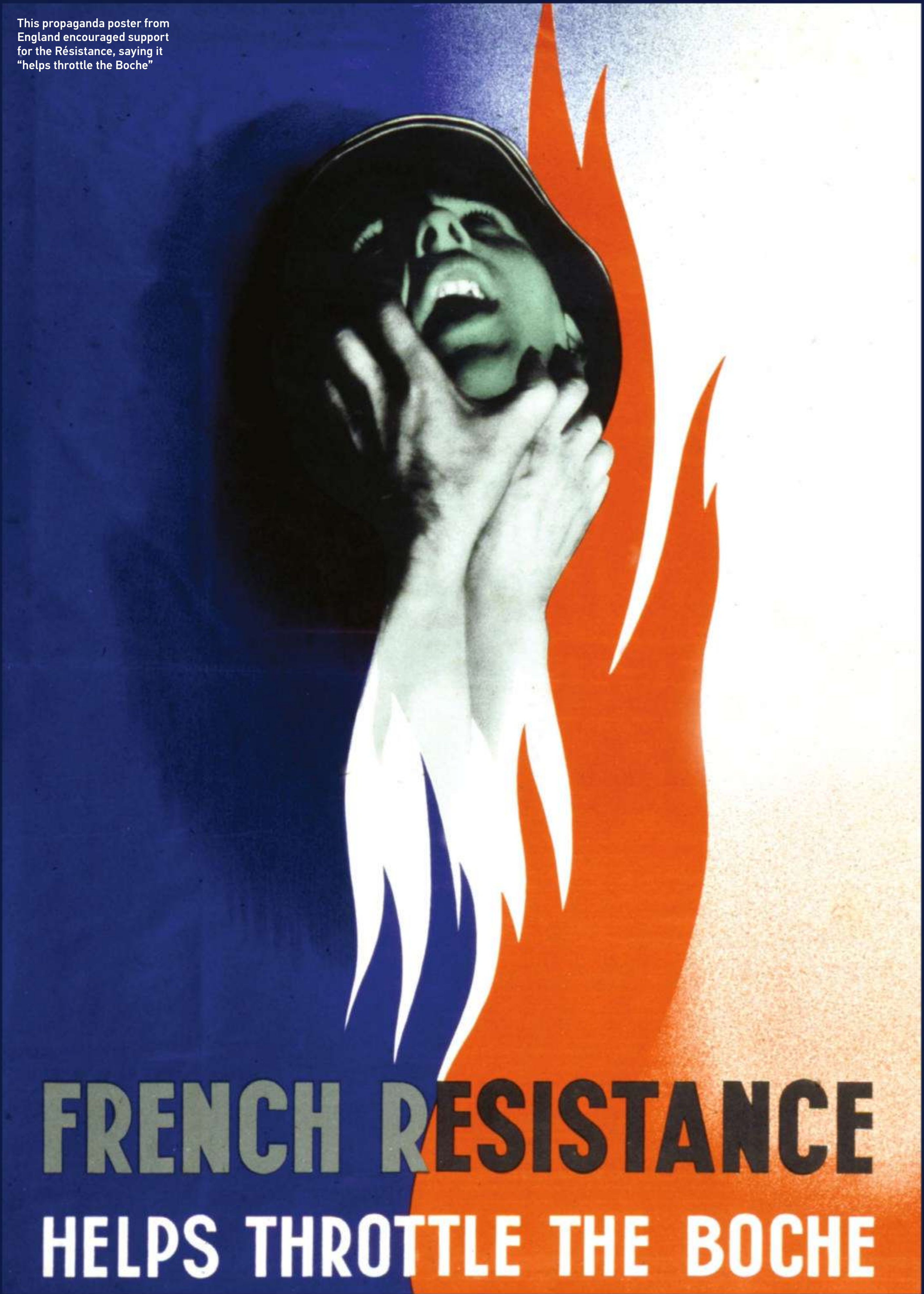


This propaganda poster from England encouraged support for the Résistance, saying it "helps throttle the Boche"

FRENCH RESISTANCE
HELPS THROTTLE THE BOCHE

DARK SECRETS OF THE REAL FRENCH RESISTANCE

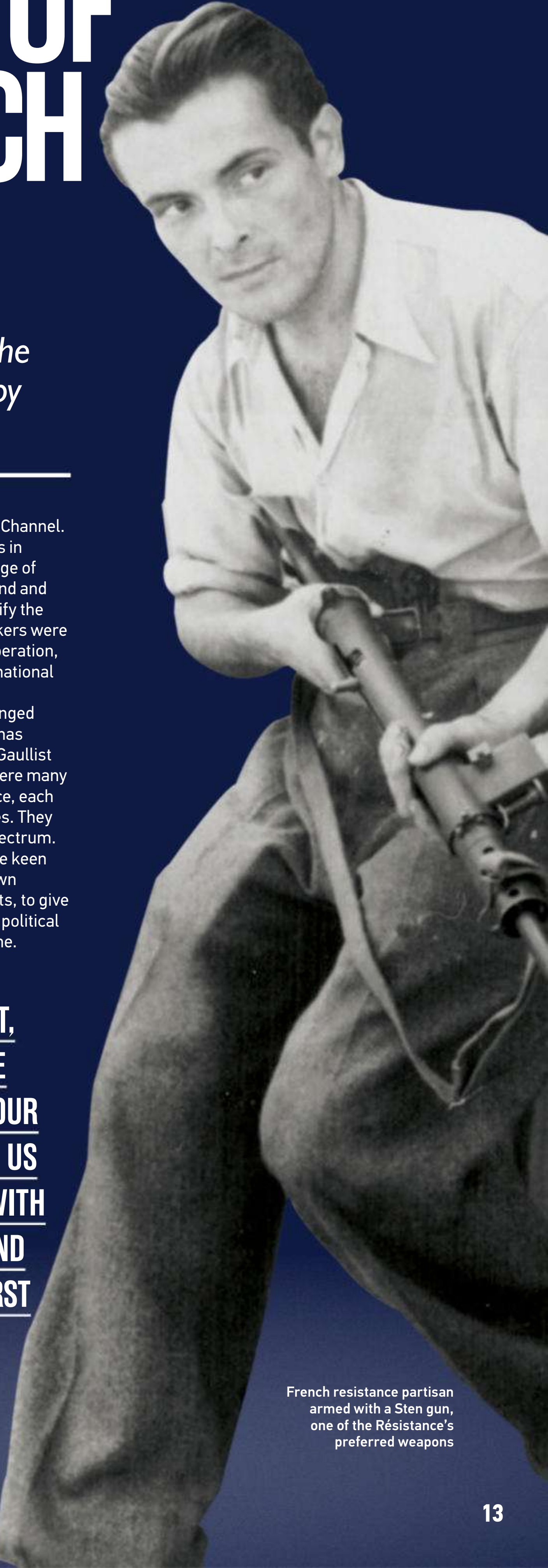
Under the oppression of Nazi occupation and the Vichy state, the fight for France was taken up by Frenchmen, women and foreigners alike

Hitler humiliated France. Defeat in just six weeks and the establishment of the Vichy puppet state brought the country to its knees and its military reputation to ruin. As the Nazi war machine took its blitzkrieg to the rest of Europe, the French found their society taken over by German soldiers. The sheer ferocity and resounding success of the attack had shocked the French people, and before any thoughts of striking back were even comprehended, civilians had to adjust to the new Nazi regime.

With the army forcibly reduced to a mere 100,000 men and Marshall Pétain's Vichy government gradually becoming more unconvincing, pockets of opposition began to appear in many parts of occupied France. Known in popular memory as La Résistance Française, the well-known story tells of the inspirational leadership by exiled general Charles de Gaulle, who roused French men and women with regular motivational broadcasts from across the Channel. The Gaullist movement assisted the Allies in liberating France, and since then, the image of a Frenchman with machine gun in one hand and cigarette in the other has come to personify the resistance movement in France. Filmmakers were everywhere in the capital on the day of liberation, documenting what was seen by the international audience as La Résistance's finest hour.

However, historical revision has challenged this view, and this idea of the Résistance has become known in some quarters as the 'Gaullist myth'. Contrary to popular belief, there were many different factions involved in La Résistance, each comprising different religions and cultures. They also came from all across the political spectrum. After the war, de Gaulle and his allies were keen to minimise the efforts of the lesser-known resisters, in particular French communists, to give the new French Fourth Republic as much political leeway as possible in the Cold War to come.

> "WE LIVED IN THE SHADOWS AS SOLDIERS OF THE NIGHT, BUT OUR LIVES WERE NOT DARK AND MARTIAL… THERE WERE ARRESTS, TORTURE, AND DEATH FOR SO MANY OF OUR FRIENDS AND COMRADES, AND TRAGEDY AWAITED ALL OF US JUST AROUND THE CORNER. BUT WE DID NOT LIVE IN OR WITH TRAGEDY. WE WERE EXHILARATED BY THE CHALLENGE AND RIGHTNESS OF OUR CAUSE. IT WAS IN MANY WAYS THE WORST OF TIMES AND IN JUST AS MANY WAYS THE BEST OF TIMES, AND THE BEST IS WHAT WE REMEMBER TODAY"
>
> *– Jean-Pierre Levy, leader of the Franc-Tireur*



French resistance partisan armed with a Sten gun, one of the Résistance's preferred weapons

In recent years, the politics of memory has come to the fore in an attempt to realise the efforts of these lesser-known groups and how the Résistance was not just a national rebellion, but part of a European-wide anti-Fascist drive to erase the Nazis.

The defence of their homeland was a patriotic reflex for only some of the French citizens. What is often forgotten in the post-1945 fanfare of Allied victory is that many of the French initially tolerated or even collaborated with the Nazis. One example is the right-wing military group known as the Service d'ordre légionnaire, which was created by war veteran and far-right leaning Joseph Darnard. This group wholeheartedly supported the Vichy government and even participated in aiding the German occupation by rounding up Jews.

This assistance to the Third Reich wasn't limited to just France either – the 6,000 men from the Légion des Volontaires Francais, or Charlemagne Division, went as far as joining the Wehrmacht and fighting in the USSR after the opening of the Eastern Front.

The vast majority of the French weren't National Socialists of course, and their non-resistance came from the fact that they simply weren't ready to risk the dangers involved in an uprising. They knew the danger was great and did what they could just to survive by keeping their heads down, following Nazi policies as an act of self preservation. Co-operation with the Nazis was also motivated by economic reasons, and by April 1942, French industry had secured German contracts to the tune of 2.36 billion Reichsmarks. Anyone who wasn't willing to live in a Nazi state fled south across the demarcation line between Vichy and Occupied France. 8 million refugees made the journey, stuffing all they could fit into cars and train carriages. The French Third Republic was over.

Right: De Gaulle addressing the people of France on one of his many radio broadcasts from across the Channel. Just how many French citizens heard his motivational words is widely debated

In the safety of Britain, de Gaulle believed he was the self-appointed leader of the Free French but very few tuned in to his famous radio appeal on 18 June 1940, and many acted on their own accord and with their own political and social agendas. In fact, he had next-to-no input for the first year of German occupation. Many had expected the new leader of the Vichy government, Philippe

> "HATRED TOWARDS THE GERMANS INCREASED DRAMATICALLY OVER THE COUNTRY AND SOME THINGS AS INNOCENT AS A FRENCH GIRL BEING TAKEN TO THE CINEMA BY A WEHRMACHT SOLDIER OUTRAGED FRENCHMEN"

FORGOTTEN HEROES OF THE RESISTANCE

While de Gaulle was across the channel in the safety of London, these courageous individuals were slugging it out against the Waffen SS on the streets of France

GUY MÔQUET

A relatively unknown figure, Môquet was executed at the tender age of 17. Beginning his life of activism as a child, he distributed leaflets filled with anti-Nazi propaganda around marketplaces and cinemas. He was arrested in October 1940 and was one of killed in retaliation to the murder of Karl Hotz.

Môquet is remembered mostly for his emotional final letter to his family once he found out he would be executed

VIRGINIA HALL

Virginia Hall was a talented speaker of many languages, so the American was naturally an ideal choice for the Résistance. Residing in France when the war began, she was forced to leave the country by suspicious Germans in 1942 but returned as a valuable spy for the OSS.

Hall was known by many aliases including the 'lady with the limp' due to her wooden leg

BORIS VILDE

Saint Petersburg-born and Estonian-raised, Vilde first came to Paris in 1934. When war broke out, he became part of the Résistance and utilised his linguistics skills to help produce the anti-Nazi newspaper *Résistance*. Sadly, his group was infiltrated by Vichy supporters and he met his end at a firing squad in February 1942.

The linguist was so influential that he is credited with introducing the word 'resistance' into the Estonian language

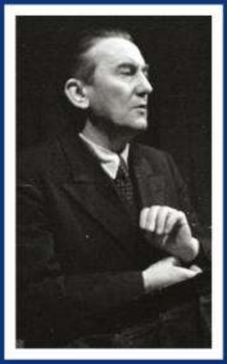
NANCY WAKE

Known as the White Mouse due to her ability to avoid capture, Wake parachuted into France as part of the SOE and became a courier and a saboteur for the Résistance. Reportedly killing an SS guard with her bare hands, she became the Allies' most decorated servicewomen of the entire war.

At her most dangerous, Wake was top of the Gestapo's Most Wanted list and had a 5 million franc bounty on her head

FRANZ DAHLEM

Dahlem was a German veteran of World War I who dedicated himself to communism after the war. Fleeing to France, he discussed the idea of creating a 'German Popular Front' against National Socialism but was captured and sent to Mauthausen concentration camp for the remainder of the war.



Dahlem was part of the KPD (German Communist Party) in exile during the war

ADRIANA SCRIABINA

Scriabina was the co-founder of the Armée Juive Zionist resistance movement. Her pseudonyms included Sarah Knut and her activism helped organise the Jewish resistance movements in France. She was killed by the Milice in 1944 and received the Croix de Guerre and Médaille de la Résistance posthumously.

Originally a poet from Russia, Scriabina ventured west as a refugee and became involved in Jewish underground movements

Pétain, the hero of Verdun, to have an ace up his sleeve, but when it became clear that this was not forthcoming, the resistance began.

Beginning as a working-class movement for young men, it is estimated that only up to five per cent of the French population were active resisters, but many others passively opposed the Vichy regime by turning a blind eye to Résistance activities. Hatred towards the Germans increased dramatically over the country and some things as innocent as a French girl being taken to the cinema by a Wehrmacht soldier outraged Frenchmen. These experiences made the Résistance a shared vision and it became an alliance that turned into a community. It never put forward a particular political solution or constitutional framework, it was simply a way of restoring national pride and self respect.

MANY FACES OF RESISTANCE

The different factions that arose fought for very different visions of the world. After the failure of Operation Sealion, it became clear that the British wouldn't be defeated so easily and plans were hatched by the different groups to fight back. The Vichy complied with its overlords and instructed the population not to fight against the Germans, preventing as many troops as possible from leaving the country to take up arms against the Axis in another Allied military.

The French even had to pay the Wehrmacht's occupation costs. As people began to realise that the occupation was the beginning of a forced change of culture into the German Volksgemeinschaft, the rebellions escalated. On 11 November 1940, this anti-German sentiment increased further as French students were apprehended while trying to lay a World War I commemorative wreath at the Arc de Triomphe. Slowly but surely the movement took flight and, to begin with, most acts would be undertaken in secret. But a small circulation of anti-Nazi graffiti and leaflets would barely make a dent in the German occupation.

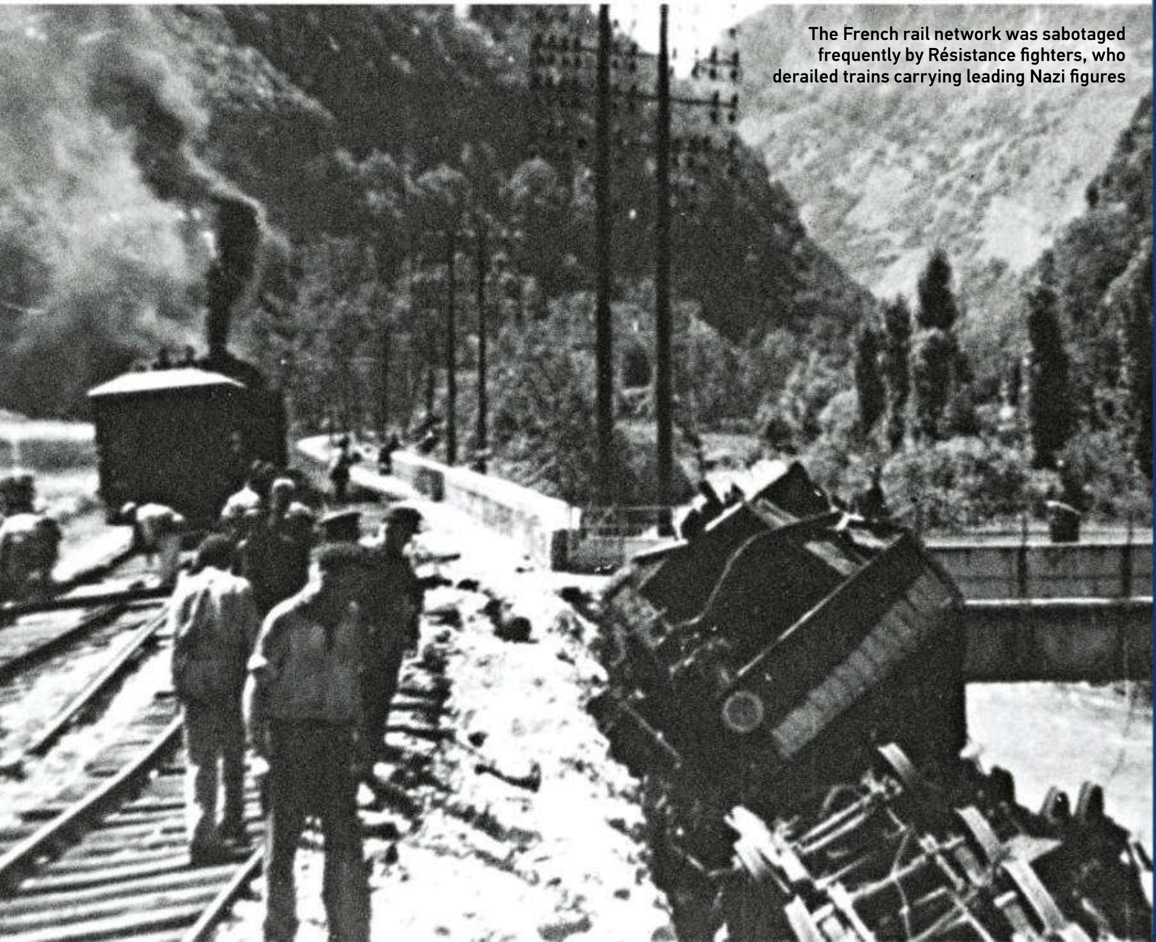
As citizens began to share beliefs, co-ordinated efforts took shape. In the north, the Confrérie Notre-Dame (Notre-Dame Brotherhood), and Alliance groups sprang up, while in the south, Libération-Sud (Liberation South), and Franc-Tireur (Free Shooters, Mavericks) were founded. One group, Défense de la France, was run by students and operated out of a basement below the geology department of their school.

On the whole, the more southern areas of France were less active as they were hesitant to fight a war and invite German occupation. The largest organisation, Libération-Nord, was set up in the north. The brainchild of activists Christian Pineau and Robert Lacoste, the group had close ties to French trade unions and its origins were signed off by the 'manifesto of the 12', which included ten trade unionists from the General Confederation of Labour (CGT) group.

The communists within France also set up a nationwide organisation known as the Front National and swiftly established themselves as one of the most violent groups operating. These organisations often fought among themselves, as they tussled to be the major faction, and it wasn't until later in the war that they would be united under one banner and the common goal to liberate their nation.

Resistance groups were both violent and non-violent. One of the first major organisations to give any sort of payback was the railway workers' group, les Cheminots. Their key positions in France's transportation system meant that they could contribute to the spreading of anti-German literature and the escapes of Résistance members.

By purposely diverting freight to incorrect locations, weakening cement by 'sweetening' it with sugar and causing derailments by being



The French rail network was sabotaged frequently by Résistance fighters, who derailed trains carrying leading Nazi figures

THE MILICE: THE ANTI-RESISTANCE

A select few who took up arms on the side of the Wehrmacht

The collaborationist militia, the Service d'Ordre Legionnaire, had been in existence since the initial invasion of France, but by 1943 it had morphed into the more radical Milice. The group was led by Joseph Darnand, who took a personal oath of loyalty to Hitler and received the rank of Sturmbannführer in the SS. By 1944, the initial 5,000 members had swelled to 35,000 as the group helped the Gestapo hunt down resisters. They were known for being ruthless, taking no prisoners, torturing anyone who didn't comply and even shooting Résistance members who were in hospital. Just one of the counter-resistance movements, but by far the largest, spies from the Milice helped arrest Jean Moulin and several agents from the SOE-sanctioned Prosper Network, whose headquarters was infiltrated by the Sicherheitsdienst (SD).

The Milice often came into contact with the Maquis, with the former often claiming the upper hand as they were supported by the Wehrmacht. The Maquis were an easy target for the Germans and several massacres occurred, as they weren't recognised as a military so weren't under the same regulations as soldiers. The Milice found themselves isolated when the Germans began to retreat and many fled to the Reich. Those who stayed were dealt with harshly after liberation.

> "THEY WERE KNOWN FOR BEING RUTHLESS, TAKING NO PRISONERS, TORTURING ANYONE WHO DIDN'T COMPLY AND EVEN SHOOTING RÉSISTANCE MEMBERS WHO WERE IN HOSPITAL"

Below: Members of the Milice proudly carry captured British Bren guns and Lee-Enfield rifles

lax on signals, groups such as the Fer Réseau (Iron Network) were formed as the majority of the opposition concerned itself with wearing the German patience down over time.

Underground newspapers such as *Libere-Toi!* (Free Yourself!) and *Sous La Botte* (Under The Boot) were published in the north by the end of 1940, as word began to spread on how best to make life difficult for the occupiers. Even classical texts from French authors came back into circulation to help inspire French nationalism. Dissention via the press was common practice in France and the publication of literature was an efficient way of galvanising people to rise against the Reich.

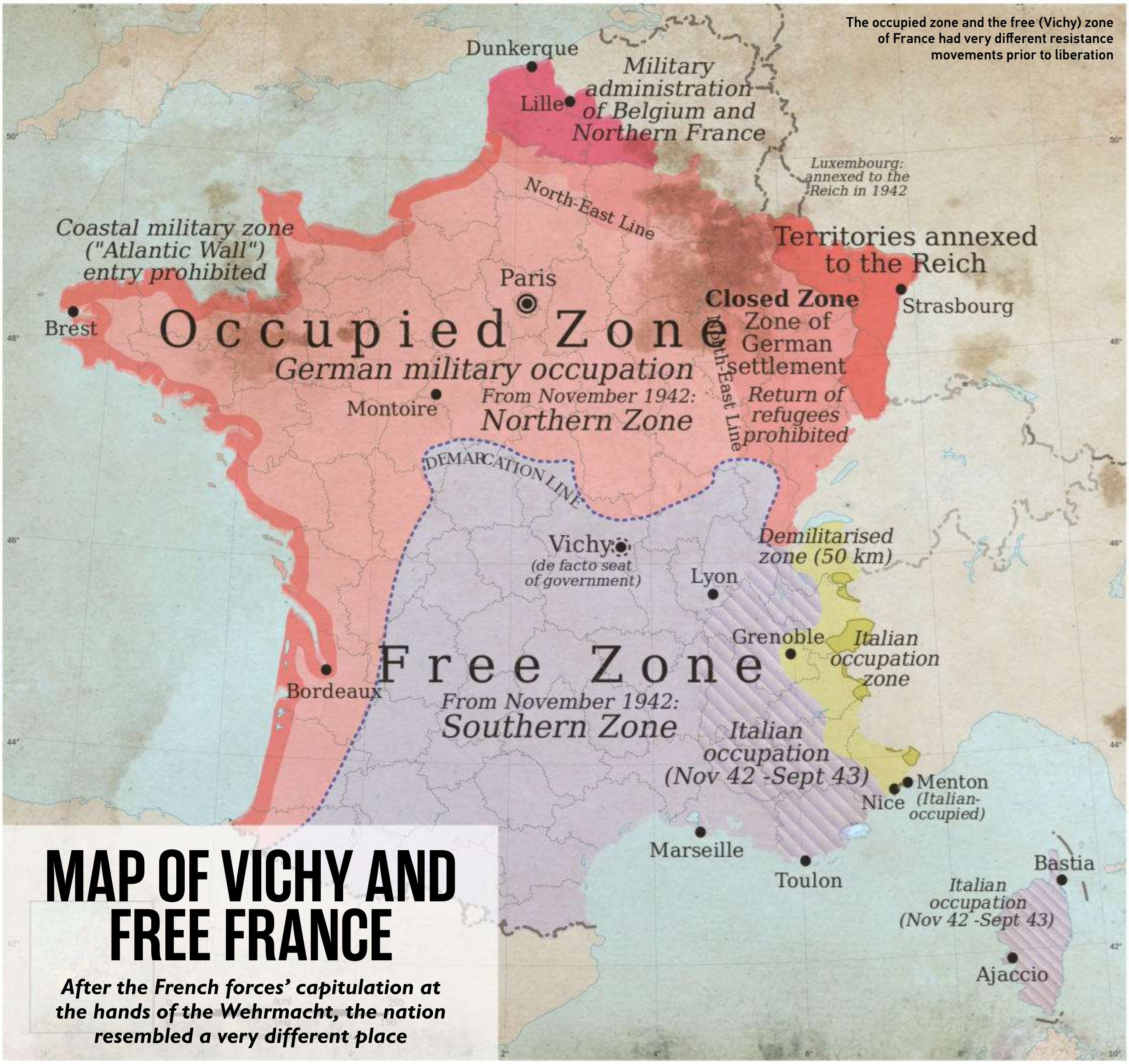
Music was also important and *Le Chant Des Partisans* (Song Of The Partisans) became the unofficial anthem of the Résistance. However, it wasn't long until the Germans cracked down on this discontent. Anyone found would be arrested and deported to a work camp, but these threats didn't stop the movement, and over time its methods of defiance began to branch out.

Individual acts of sabotage became frequent and a popular form of insurrection was the cutting of telephone lines. This resulted in the deaths of many German personnel who were subsequently not informed of incoming RAF bombing raids.

One group that quickly made itself invaluable was the Cadix Team – a group of Poles who had made their journey west after the fall of Poland. They passed on their knowledge of how to crack the enigma machine onto their western allies. The group dissolved after its members were captured, but despite being tortured, they never gave away their secret.

As the war in Europe began to escalate, Allied pilots were shot down over the skies of France. If they survived the drop and evaded capture, they would be smuggled into neutral Switzerland or Spain by the Résistance and given fresh instructions on German military strategies to take back to Allied command.

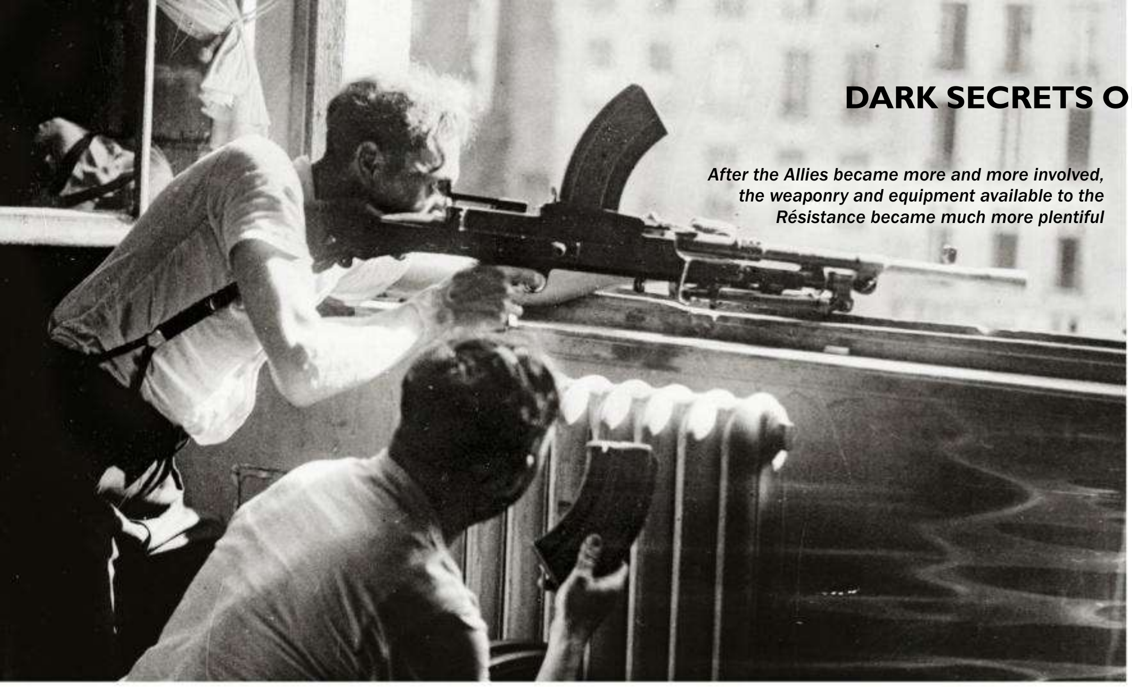
One of the main organisations that took part in this was a group of French Zionists known as the Armee Juive (Jewish Army), who specialised in smuggling Jews over the Pyrenees. Saving the pilots was undertaken using a number of ratline escape routes, and as soon as the Allies got wind of this rapidly rising movement (approximately 28,000 fugitives were smuggled across the French-Spanish border alone), they sent the British Special Operations Executive (SOE) to help co-ordinate future operations. Now, some of the groups answered directly to these Allied organisations. The first SOE agent dropped into France in May 1941, and it was clear that the age of La Résistance was here to stay.


Dunkerque
Lille
Military administration of Belgium and Northern France
Luxembourg: annexed to the Reich in 1942
North-East Line
Coastal military zone ("Atlantic Wall") entry prohibited
Territories annexed to the Reich
Strasbourg
Paris
Brest
Occupied Zone
German military occupation
Closed Zone
Zone of German settlement
Return of refugees prohibited
North-East Line
Montoire
From November 1942: Northern Zone
DEMARCATION LINE
Vichy
(de facto seat of government)
Demilitarised zone (50 km)
Lyon
Grenoble
Italian occupation zone
Bordeaux
Free Zone
From November 1942: Southern Zone
Italian occupation (Nov 42 -Sept 43)
Menton (Italian-occupied)
Nice
Marseille
Toulon
Bastia
Italian occupation (Nov 42 -Sept 43)
Ajaccio
50°
48°
46°
44°
42°
2°
4°
6°
8°
10°

MAP OF VICHY AND FREE FRANCE

After the French forces' capitulation at the hands of the Wehrmacht, the nation resembled a very different place

The occupied zone and the free (Vichy) zone of France had very different resistance movements prior to liberation



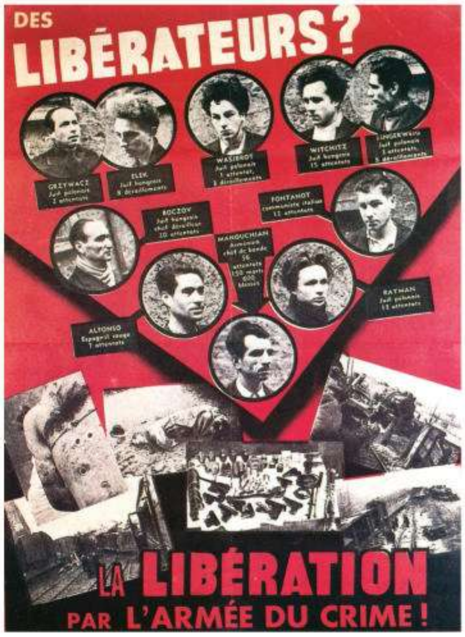
After the Allies became more and more involved, the weaponry and equipment available to the Résistance became much more plentiful

FROM ANNOYANCE TO THREAT

On 22 June 1941, the anti-Nazi movements received a boost as all the communist factions within France, in direct response to the launch of Operation Barbarossa, merged into one single group. This immediately increased the larger group's political muscle as the communists took the fight back to the Nazis, with direct orders from Moscow ordering the group to disrupt the Third Reich's military.

The Feldkommandant of Nantes, Oberstleutnant Karl Hotz, was assassinated on 20 October 1942, and the group boasted that they were killing more than 500 German soldiers a month. The German reaction to Hotz's death was severe and 50 French hostages were executed immediately as a result. These attacks were met with disdain by the majority of the population, who did not want to see innocent lives being lost for a cause they did not fully support. At this time, the majority of resistance still advised against violence. Underground press and industry sabotage were, at this time, still the main way of fighting back, and anti-Nazi propaganda could now be frequently found on train carriages and in apartment foyers. As 1941 wore on, SOE agents and Résistance fighters were beginning to communicate freely and coded messages from the BBC were filling the airwaves. There were also now defectors from the Vichy cause. Henri Frenay, a former member of the Vichy administration, began publishing his own underground newspapers. He became so disillusioned that he created his own resistance group: Combat. These added defectors initiated a counter-resistance movement as the Wehrmacht and Gestapo began to rule with an even tighter iron fist. Food was rationed further and access to cars was severely limited to the French. As the Gestapo mobilised, many Résistance fighters fled to the forests of several unoccupied zones for safety and to regroup. By the summer of 1942, even with the added Gestapo presence, French discontent had begun to boil over. One of the first examples of open dissatisfaction was on 14 July, Bastille Day in France, where hoards of people took to the streets in national colours. 66 demonstrations took place, but the event was overshadowed two days later by the so called 'Vel d'Hiv Roundup', which saw German soldiers take thousands of Jews into the Parisian cycling stadium, the Vélodrome d'Hiver, for deportation to Auschwitz.

Below: The Vichy authorities were intent on bringing down the Résistance and published many propaganda posters to tarnish the freedom fighters as criminals



This event demoralised support for the Vichy and Nazi regimes even further, but the demarcation line was proving to be one of the toughest obstacles for a national resistance movement. Naturally, the spread of propaganda and ideology in the occupied north was much trickier, but many also still supported Pétain even if they weren't pro-German. The Résistance realised that battling against the Germans also meant fighting what Vichy stood for: complete collaboration with the Third Reich.

THROTTLING THE BOCHE

It wasn't only French citizens and the SOE who were getting involved. Albert Guérisse was a member of the Belgian resistance and went under the alias of Patrick Albert O'Leary. Guérisse helped establish the PAT line, which became another effective means of transporting downed pilots to safety. Pilots from as far afield as New Zealand benefitted from one of these lines, with Kiwi RAF pilot John Morris reliant on one after his burning fighter fell from the sky.

Help also came in the shape of Rene Guiraud – an American spy who came to the fore after

SOE AND THE RESISTANCE

The spies sent to help resistance groups "Set Europe Ablaze"

Resistance groups were key in slowing down the German forces and eventually contributing to their downfall in occupied countries during the Second World War. Britain's Special Operations Executive (SOE) was set up to aid these resistances in territories such as Poland, Greece, Belgium and France. Between 1941 and 1944 around 400 agents were sent into France to aid the French resistance by sabotaging power stations, water plants and transport networks as well as to secure drop zones for supplies. Successful campaigns such as Operation Josaphine-B proved that sending in small groups of operatives to sabotage targets were more effective than simply bombing them by air.

After some sabotages the Nazis would respond with reprisals such as executions.

To avoid further reprisals, SOE stated to carry out 'invisible sabotages', where they wouldn't leave any evidence that operations were attempted. For example: they would send the trains to the wrong destination by forging paperwork rather than sabotaging the tracks. In 1945 the American General Eisenhower claimed 'the disruption of enemy rail communications, the harassing of German road moves and the continual and increasing strain placed on German security services throughout occupied Europe by the organised forces of Resistance, played a very considerable part in our complete and final victory.'

Below: The SEO was officially formed On 22 July 1940 by Hugh Dalton, the Minister of Economic Warefare under order of Winston Churchill

the American Office of Strategic Services (OSS) became involved in the resistance movement in 1943. Guiraud parachuted into France along with his radio operator to collect intelligence and sabotage German military units. He managed to assemble 1,500 Guerrilla fighters and utilised the men to develop complex intelligence networks. He was eventually caught and sent to Dachau and sadly, as Guiraud was dressed as a civilian, he was technically an illegal combatant, denying him POW rights under the Geneva Convention.

Dachau is infamous for its treatment of Jews in particular, but the most common place for a captured French Résistance member to end up was in Natzweiler-Struthof, a camp in the Alsace. The Nacht und Nebel (Night and Fog) directive against political activists was decreed by Hitler and an estimated 24,000 anti-Fascist fighters (and roughly 56,000 French fighters) from all over Europe were sent to the camp, as for the first time resistance became a truly continental movement.

The Résistance had many Jewish members. Andre Scheinmann escaped Nazi Germany after Kristallnacht in 1938 and, learning that his parents had been imprisoned at Auschwitz, the former French Army soldier joined up as an interpreter. He worked his way up the hierarchy to become second in command of a network of 300 spies. Using his position in the French national railroad to his advantage, he helped gather information on German troop movements in weekly bulletins. Eventually, the Gestapo got wise to his leaks, but by the time he was sent to Natzweiler, Scheinmann's work was done. He survived the camp and was awarded the Legion of Honor and the Médaille de la Résistance by the French government after the war.

The camp's most famous inmates could well have been World War I veteran General Charles Delestraint and former commander of the French Seventh Army Aubert Frere. Both served in the Résistance; Delestraint was recruited in 1942 and tasked with commanding the Armée secrète, while Frere was leader of the Organisation de résistance de l'armée (ORA). Many of the prisoners at Natzweiler had links to a resistance group known as the Maquis.

The main arm of violent response in France, the group's origins date back to the spring of 1942, when these freedom fighters sprung up primarily in the Limousin and Puy-de-Dôme regions. Further down the line, they spread to other areas of France and became renowned for their vicious attacks on German forces. If any French POWs escaped the camps, they would frequently end up joining or re-joining the Maquis as they sought retribution for their suffering.

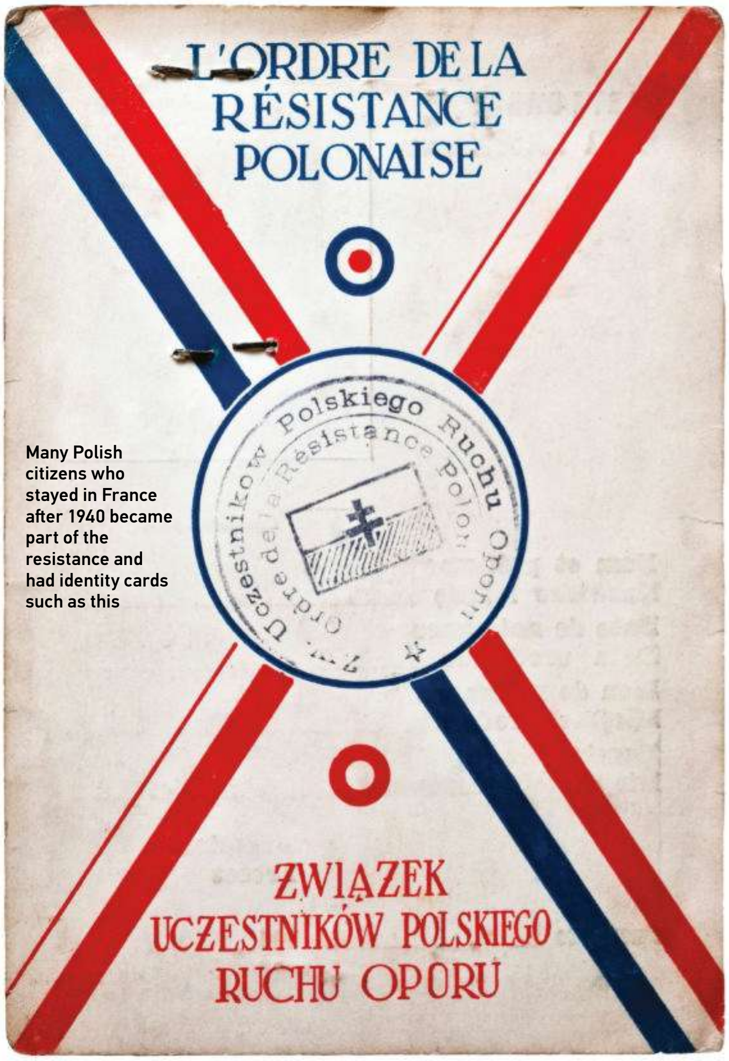
UNITED FACTIONS

The British were hesitant to give de Gaulle the position he desired. Churchill and Roosevelt never trusted him fully and after the disastrous defeat of an Anglo-French force at Dakar in September 1940, the French general was temporarily frozen out of all military planning.

De Gaulle's contact with France was limited, and in reality he knew very little about the actual resistance movements that were going on in the country. When he announced in October 1941 that he would now direct resistance in France under the new Comité Français de Libération Nationale, there was still quite a way to go for Anglo-French movements to be properly co-ordinated.

De Gaulle's pipe dream would only be properly realised after he had assigned a lieutenant, ex-civil servant Jean Moulin, to undertake his orders in France. As Moulin met with the leaders of the southern resistance groups, Combat, Libération-Sud and Franc-Tireur all came under the umbrella of the Armée secrète. Somewhat reluctantly, a compromise was made for the Résistance leaders to recognise de Gaulle as their leader in return for much-needed material aid from London.

The Résistance had always felt under supplied and under appreciated by the Allied powers, so to bring the faction leaders round to his way of thinking, de Gaulle wrote the 'Declaration to the Resistance Movements' in June 1942, pledging his commitment to 16 resistance organisations for a post-war French democracy. The communists were the only group not to acknowledge the new pact, nevertheless, the Moulin-led Conseil National de la Resistance (CNR) was in place by



L'ORDRE DE LA
RÉSISTANCE
POLONAISE

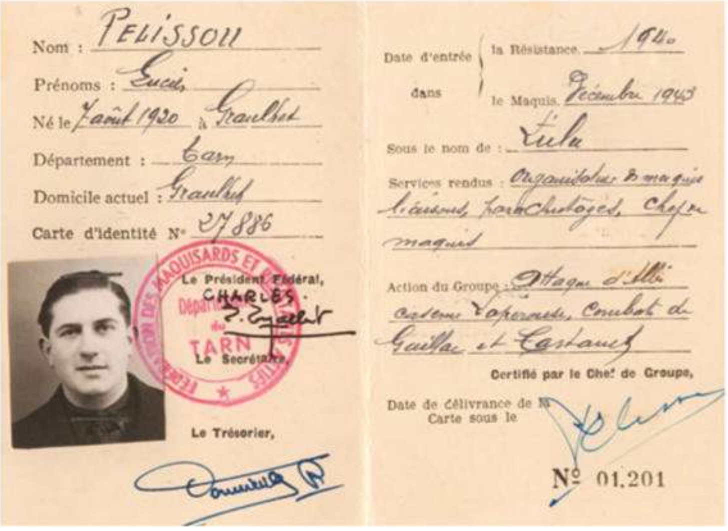
Związek Uczestników Polskiego Ruchu Oporu
Ordre de la Résistance Polonaise

ZWIĄZEK
UCZESTNIKÓW POLSKIEGO
RUCHU OPORU

Many Polish citizens who stayed in France after 1940 became part of the resistance and had identity cards such as this

Above: A captured Résistance fighter. The German caption read: "This communist leader is on the wanted list. His papers prove his affiliation with terrorist groups"

Below: An example of a Résistance card that was used to help identify combatants and what group they belonged to



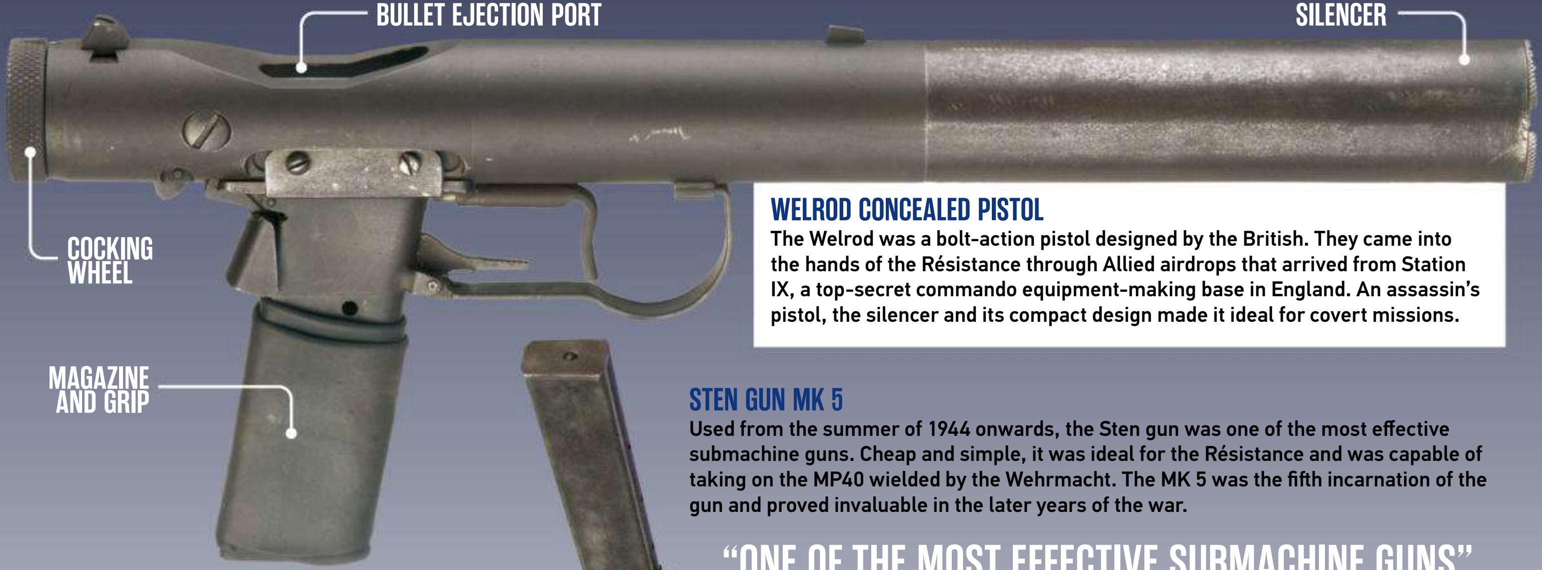
Nom : Pelissou
Prénoms : Lucien
Né le 7 août 1920 à Graulhet
Département : Tarn
Domicile actuel : Graulhet
Carte d'identité N° 27886

Le Président Fédéral,
Charles
Département du Tarn
Le Secrétaire,
Le Trésorier,

Date d'entrée dans la Résistance 1940
le Maquis Décembre 1943
Sous le nom de : Lulu
Services rendus : Organisation de maquis liaisons parachutages, chef de maquis
Action du Groupe : Attaque d'Albi caserne Laperouse, Combat de Gaillac et Castanet
Certifié par le Chef de Groupe,
Date de délivrance de la Carte sous le
N° 01.201

WEAPONS AND EQUIPMENT OF LA RÉSISTANCE

With the military out of the picture, the French freedom fighters were forced to use whatever firearms they could lay their hands on



WELROD CONCEALED PISTOL

The Welrod was a bolt-action pistol designed by the British. They came into the hands of the Résistance through Allied airdrops that arrived from Station IX, a top-secret commando equipment-making base in England. An assassin's pistol, the silencer and its compact design made it ideal for covert missions.

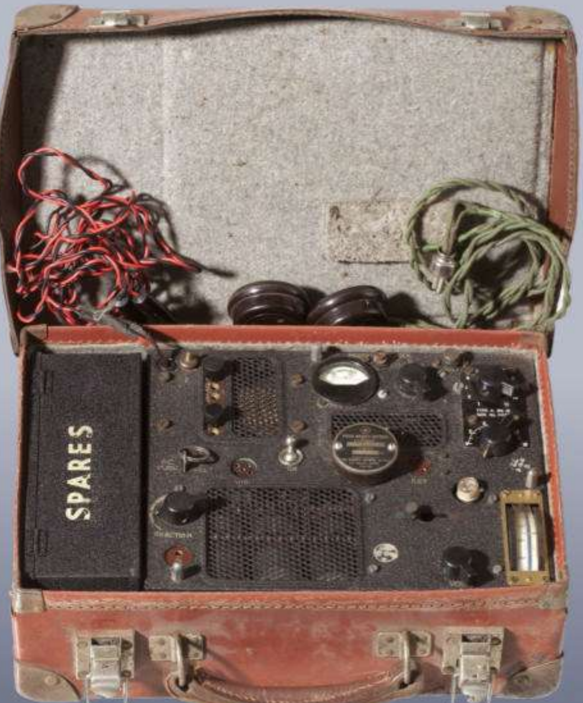
STEN GUN MK 5

Used from the summer of 1944 onwards, the Sten gun was one of the most effective submachine guns. Cheap and simple, it was ideal for the Résistance and was capable of taking on the MP40 wielded by the Wehrmacht. The MK 5 was the fifth incarnation of the gun and proved invaluable in the later years of the war.

> "ONE OF THE MOST EFFECTIVE SUBMACHINE GUNS"

FP-45 LIBERATOR

As the US forces made their way into Europe, they were intent on arming anti-Nazi groups with firearms. One of the most popular weapons was this small, slightly crude pistol. The FP-45 was only a stopgap and its main function was to help the Résistance to access better Axis weapons.



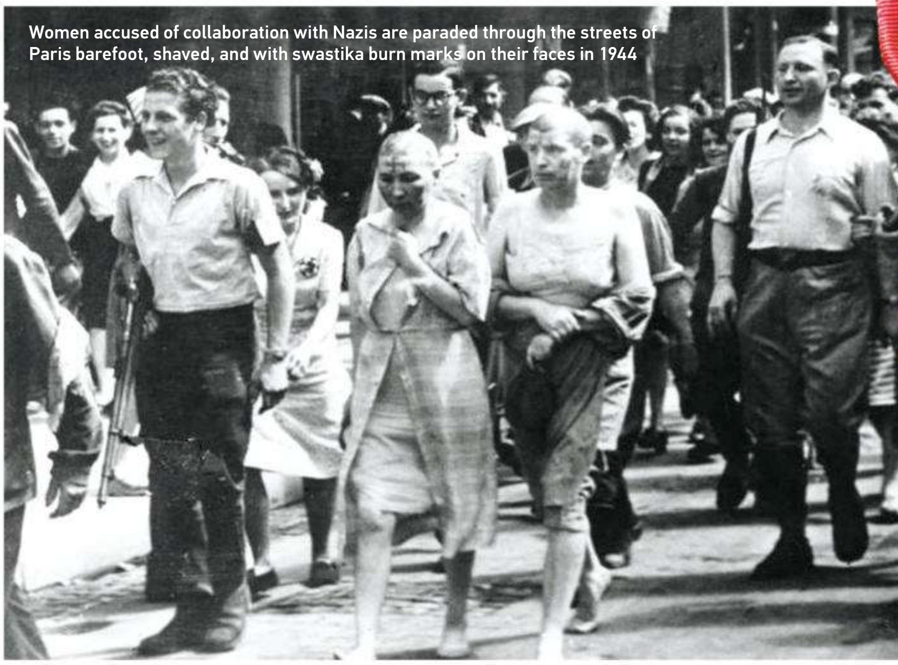
MK 111 SUITCASE RADIO

For the SOE agents in France, this was their main means of communication, and espionage was often as important as weaponry. Used in unison with hidden compasses, miniature telescopes and maps, the suitcase radio enabled the different factions to keep in touch and helped co-ordinate the different movements.

> "FOR THE SOE AGENTS IN FRANCE, THIS WAS THEIR MAIN MEANS OF COMMUNICATION"

KAR98K

When British supply drops weren't available, the Résistance would scavenge whatever firearms they could find. Homemade explosives were popular but stealing weapons such as the Kar98k and MP40 off the German occupiers was also popular practice, aggravating the Germans as an added bonus.



Women accused of collaboration with Nazis are paraded through the streets of Paris barefoot, shaved, and with swastika burn marks on their faces in 1944

Left: The Médaille de la Résistance was given out to many major figures after the war but its selective distribution helped the Gaullist memory choose who to honour and who to neglect

mid-1943, and the final stage of French resistance could begin.

The escalation of Nazi atrocities encouraged more and more violent responses, and the north in particular became a war zone. The Bruneval Raid provided a chance for the new form of resistance to prove itself, as French intelligence reports allowed British commandos to plan their attack on a radar installation in immaculate detail that would never have been achievable otherwise. It was only in 1943, when Nazi forced labour began to severely affect France, that the majority of the population wanted to completely remove the Germans. This came shortly after Vichy ended and the Wehrmacht occupied all of France to protect against Allied attacks from North Africa under Operation Torch.

One prominent example was on the Alpine plateau of Vercors, where 4,000 French freedom fighters fought against 10,000 Wehrmacht troops with such ferocity they were forced to call in an air assault to claim victory.

Elsewhere in the country, disruption efforts were becoming increasingly effective. Between January and June 1943, there were 130 acts of sabotage against rail lines every month, and by as early as September of that year, it had increased to a level of 530 per month.

Civilian cars were attached to the German troop transports to ward off bombing attempts, but the French were one step ahead and instead put timers on the explosives so they would only take out their target and not harm civilians. The Germans were struggling to transport equipment, and with the Allies about to break down the door of Fortress Europe, this help was essential to breaking the Wehrmacht.

Prior to Operation Overlord, 93 teams of three agents (one American, one British and one French) were sent to France to co-ordinate the game-changing invasion. France was now in a state of virtual civil war and the communists went one step further by kidnapping and executing Waffen SS member Major Helmut Kämpfe in June 1944. This demonstrated how influential the group had become but ended in disastrous consequences. The incensed Nazis led by Major Otto Dickmann punished these 'terrorists' by torching the village of Oradour-sur-Glane. A small commune in central France, it was destroyed on 10 June 1944 and 600 men, women and children were executed. The remains of the village remain untouched to this day.

When D-Day came, the Résistance was more than ready to help. Some groups helped isolate the 2nd SS Panzer Division in Brittany, preventing reinforcements from amassing on the beaches of Normandy. This is often down-played in contemporary literature, but was integral to the resounding success of the operation, with 3,000 written reports and 700 wireless reports being sent to Allied command in the run up to the operation. Schemes such as Plan Vert, where the Cheminots paralysed the French rail network by destroying 1,800 railway engines, and attacks on garrisons at Tulle and Gueret hastened the Wehrmacht's demise.

Post D-Day, the German forces were reeling, but the work of the Résistance was far from complete. The locals, who now wore armbands with the cross of Lorraine to show their allegiance, helped the Allies push forward and assisted in Operation Dragoon on the country's south coast. They sent small parties to Marseilles, Toulon and Sete to preserve port installations that the Germans were targeting for destruction in a brutal scorched-earth retreat.

General Eisenhower even remarked that the presence of the Résistance was worth 15 divisions in the field. With the Allies and Axis going head to head on the front line, the Résistance was free to liberate the remainder of their country and they were now regarded as legal combatants.

With the countryside virtually conquered (small sections of the Wehrmacht continued to fight hard, in the Colmar Pocket, for instance) the liberation of Paris could start. The Maquis were now under the umbrella of the de Gaulle-initiated Forces Francaises de l'interieur (FFI) and remained active when Allied troops were ashore, benefiting from weapons and millions of French Francs being parachuted into rural areas. The weapons would be stowed in barns and houses as the Résistance, who now numbered about 100,000 members, did their bit to prevent the Germans from maintaining any sort of reconnaissance network in the country.

TOTAL LIBERATION

The liberation of Paris on 25 August is remembered for the scenes of jubilation across the capital, and seemingly the work of the French Résistance was done. De Gaulle, imposing himself as liberator-in-chief, officially disbanded all the groups and urged them to join the new French Army, and many did so, signing up to hit back at the Germans as the Third Reich's borders continued to shrink.

Revelations since the war's end have stated that the liberation of Paris could have happened much sooner if it weren't for political interference. The capital city had a high communist population at the time and both Eisenhower and de Gaulle were concerned that a successful liberation by the communists could end in the left taking control of the city. As a result, very few ammunition drops were allowed within the city limits and it was decreed that Paris would be taken only on the Allied forces' mark.

De Gaulle was intent on becoming the head of a new provisional government, and events such as this sped up his ascension to power as he played the line of not being an active resister nor a collaborator perfectly. His myth of all of France always being united as one helped boost his political appeal. By March 1944, the CNR had already prepared for the end of the war and had social and economic reforms ready to implement. The Fourth Republic was taking shape and would extinguish the tortured memory of the Third.

The Gaullist memory is of Petain being the shield and de Gaulle being the sword that vanquished the Nazi threat. This outlook helped France move on in the tough post-war years and prevented vigilantes from targeting collaborators who had been scapegoated for deserting their country. Only by the 1970s, after the periods of civil unrest in the summer of 1968, when national identity and a social cohesion had stabilised, did the ideology begin to change and the efforts of the real Résistance came to the fore.

As France struggled to come to terms with this so-called 'Vichy Syndrome', the memory of the Résistance became mixed. While some saw their actions as a beacon of hope, they were also seen by others, in the first few years after the war, as terrorists who did as much harm as they did good. Conversely, the idea of any sort of Nazi collaboration is an ongoing sore subject.

A key difference to distinguish is opposition to the Germans and opposition to the Vichy regime. The French citizens who believed in Vichy France didn't necessarily approve of German

OTHER EUROPEAN RESISTANCE MOVEMENTS

The French Résistance is perhaps the most famous, but other areas of Europe also took up arms against the Nazis

POLISH UNDERGROUND STATE

Poland was one of the most harshly treated nations of the whole war. The Polish capital, Warsaw, was the centre of operations and had the largest resistance system in Europe led by brave patriots. There was an underground parliament and a home army who constantly struggled with both Nazi and Soviet overlords.

Right: Polish resistance culminated in the courageous Warsaw uprising that resulted in a fierce German backlash

BELGIAN RESISTANCE

France's neighbour also had its own resistance movement. Based primarily in the Ardennes, the Allies utilised their regular reports to help improve the accuracy of their European bombing campaigns. As well as intelligence, there were also armed units in Belgium including the Legion Belge, 'Armée Secrète' and Groupe G, who all helped create a solid network of civil resistance.

Below: A Belgian nurse treats a wounded British soldier as they fight their way through Europe

NORWEGIAN RESISTANCE

With vast swathes of uninhabited rural land and a border with neutral Sweden, Norway was an ideal country for resistance movements. The Norwegian Secret Army, the Milorg, was integral in helping aid British commando operations in the country and helped bring down the Quislings, who collaborated with the Nazis.

Left: Norwegian resisters march away from Akershus fortress after retaking it from the Nazis on 22 May 1945

RESISTENZA ITALIAN

Mussolini and his Blackshirts were never universally popular on the Italian peninsula. Resistance was mainly subdued under the Fascist dictatorship but escalated after the Allied landings in Sicily and the establishment of the Italian Social Republic. Italian partisans helped the Allies push the Germans back to the Alps and eventually got their prize, the capture of Il Duce.

Above: The Resistenza took their anger out on Mussolini and the body of Il Duce was strung up in front of crowds in Milan

HOME GUARD

After the fall of France, the threat of a German invasion on British shores was very real. In response, an army of civilian volunteers known as the 'Auxiliary Units' was assembled to carry out sabotage and guerilla attacks in the wake of a potential German invasion. Luckily, it never came to this.

Above: Auxiliary units formed part of the Home Guard and were trained in the face of a potential invasion

occupation. For many frightened ordinary people, the government was a means to an end and it was only in the later years of the war when Nazified laws came into existence and the Nazi atrocities began to worsen that many rallied to action.

Perhaps the most effective way of describing the real Résistance is to remove the idea of the distinction between being either a resister or collaborator, with no in-between. The real Résistance was a combination of things. It began with the passion and dedication of small groups to stand up and fight for their future, but only snowballed into the force we remember it being with substantial help from Allies.

France was not liberated by itself, it was given its freedom by an international coalition. It owes gratitude to both de Gaulle and Moulin in particular for being the driving forces that united each faction towards that effort.

There will always be controversy over the identity of the real Résistance and even if the true fighters were those who rose up prior to June 1944, it will be remembered forever for its crucial contribution to the freedom of France, whether Gaullist or otherwise.

VIVE DE GAULLE

Images: Alamy; Rex Features

NANCY WAKE: THE WHITE MOUSE

The special agent who ran rings around the Nazis and ended up at the top of the Gestapo's most-wanted list

WORDS **BEN GAZUR**

Nancy Wake would become one of the most decorated servicewomen in British history but she was born a world away from the European conflict that would define her life. Wake was born in New Zealand and raised in Australia. Aged just 16, she ran away from home to train as a nurse before travelling first to New York then London to become a journalist.

As a journalist in Europe in the 1930s, she witnessed the rise of the Nazis. On the streets of Vienna, she saw the brutality of the Nazis when Jewish men and boys were beaten in front of her.

In 1939, she married a wealthy Frenchman and moved to Marseille. Their wealth might have allowed the couple to escape the worst deprivations of the Second World War but instead, Wake chose to join the fight against the Nazis. Wake said, "I don't see why we women should just wave our men a proud goodbye and then knit them balaclavas."

Following the fall of France in 1940, Wake aided the Resistance by joining the network that helped Allied airmen who were shot down over France. Many airmen found themselves hidden from the Gestapo in the couple's luxurious apartment in Marseille. The Gestapo suspected Wake's involvement and tapped her phone. She was labelled 'The White Mouse' by the Nazis for her ability to always scurry out of their traps.

In 1942, the Gestapo made their move. Wake managed to escape first to Spain, then to England. Her husband, Edmond Fiocca, however, was arrested, tortured and executed.

In England, Wake joined the Special Operations Executive, the British espionage agency, and parachuted back into France. When she was found tangled in a tree by another Resistance operative, he remarked, "I hope that all the trees in France bear such beautiful fruit this year." Never able to mince her words, she replied, "Don't give me that French shit." She was freed from the tree and able to get down to business.

One of her most extraordinary exploits involved cycling hundreds of miles across occupied France in a few days to deliver new radio codes to allow contact with the Allies. Wake also took part in raids on Gestapo headquarters. She claimed that she once killed an SS guard with her bare hands to stop him from raising an alarm.

After the war, Wake was awarded the George Medal by the British, the Medal of Freedom by the United States, and three Croix de Guerre by the French. Wake died in 2011, aged 98.

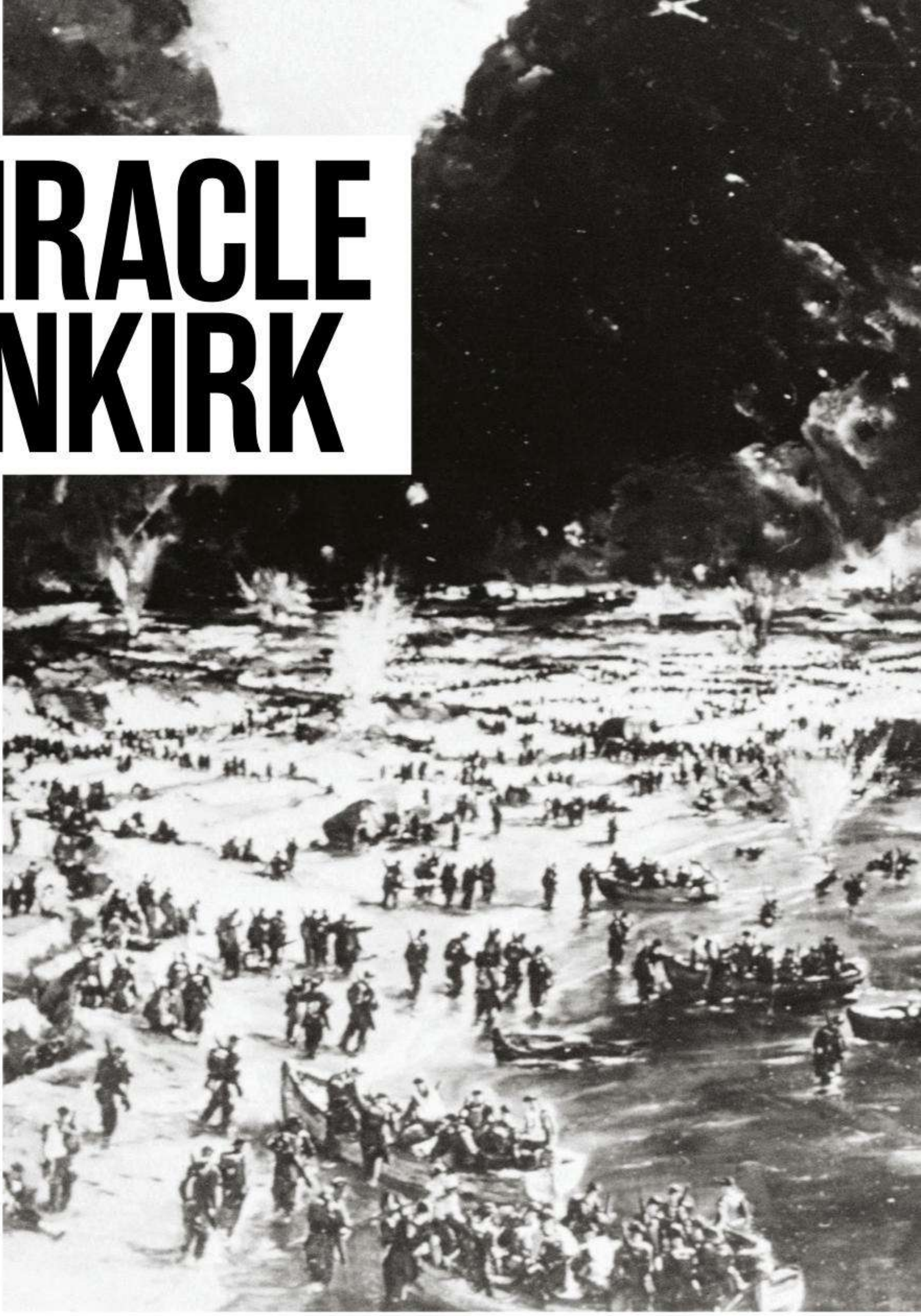
Wake wrote her autobiography, *The White Mouse*, which revealed the part she had played in the fight against the Nazis in France

For her work with the Resistance, Wake was awarded the Croix de Guerre medal three times, as well as numerous other awards by other countries

Wake thought that her good looks helped her wage war in France, as a wink could help her cross a checkpoint without being searched

Image: Getty Images, Alamy, Wikimedia Commons

THE MIRACLE OF DUNKIRK



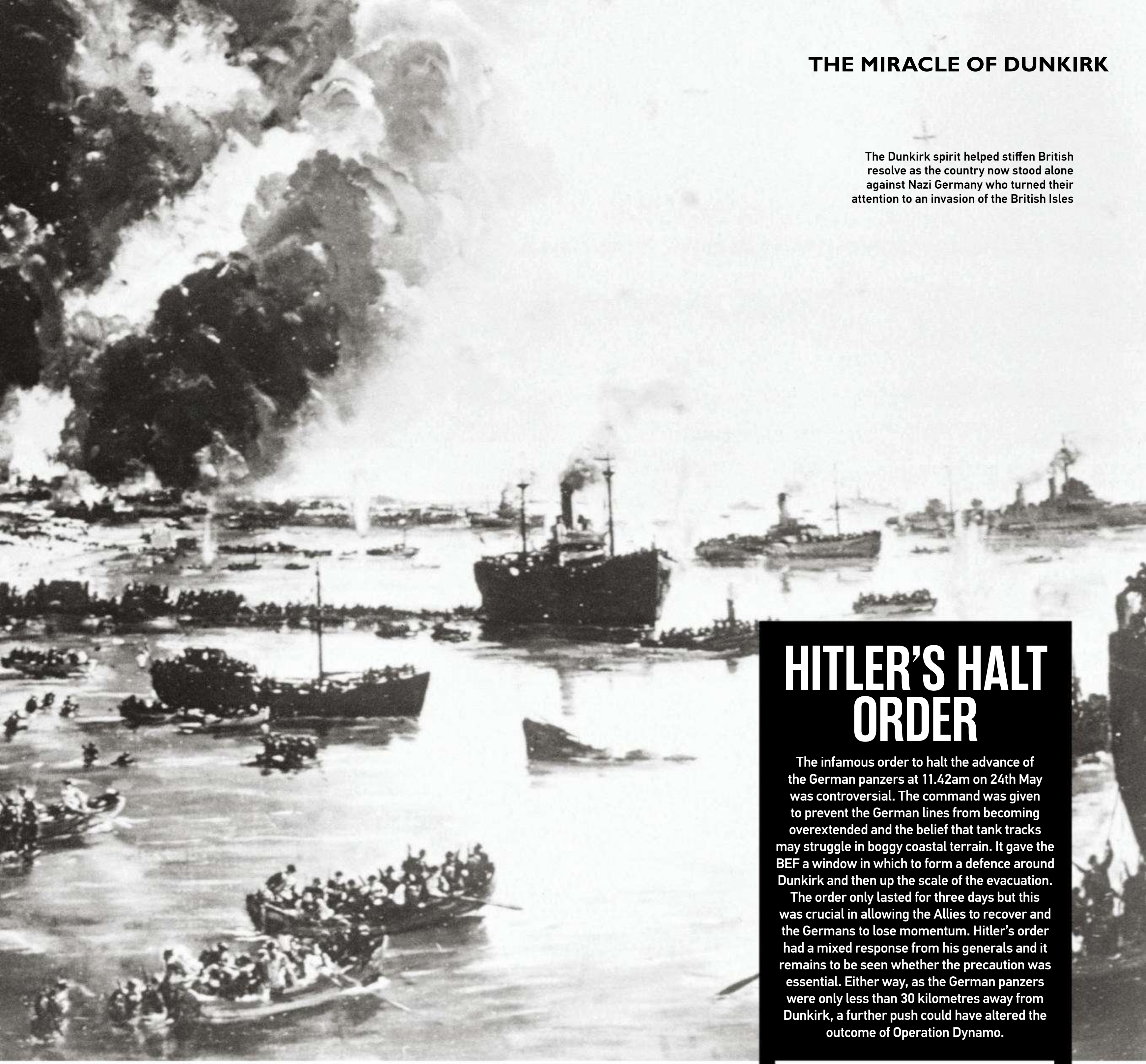
In May 1940, 340,000 Allied soldiers were saved from the full fury of the German blitzkrieg in an evacuation that kept Britain in the war, ready to fight another day

After the French surrender on 22nd June 1940, Britain stood alone against Nazi Germany. A scintillating blitzkrieg had knocked France out of the war in a matter of months and the British Expeditionary Force (BEF) had only just escaped from continental Europe thanks to a hurried withdrawal across the English Channel. The miracle of Dunkirk was an incredible feat that gave Britain both the morale and the manpower required to continue the fight against the Third Reich. Without it, Britain would have stared down the barrel of defeat.

The eight month Phoney War came to an abrupt end in May 1940, as the German panzer divisions rolled into the Ardennes. Britain and France had agreed on a defensive strategy that would keep the Wehrmacht and the Luftwaffe at bay. Both countries were well aware of the threat that Hitler posed and had done all the appeasement they possibly could to avoid another war. The invasion of Poland finally brought them both into conflict and now Hitler turned his attention to Western Europe. The French Army had a reputation as one of the best in the world and what they believed to be a near-impenetrable defensive fortification called the Maginot Line stretched across its eastern border, while the BEF would protect the Low Countries from invasion. Nine months after the German invasion of Poland, three German Army groups made their advance on 10th May 1940, the same day Winston Churchill replaced Neville Chamberlain as Prime Minister. The German plan was for Army Group A to hurtle through the Ardennes, a hilly, wooded area of France, B would take care of the Netherlands and Belgium, while C would keep tabs on the Maginot Line. The attack was a masterstroke by Hitler and caught the Allies completely by surprise. Both the British and the French had severely underestimated the strength of the German war machine, especially the armoured divisions, and were shocked at the speed and the ferocity of the German advance through the Ardennes, an area believed to be too densely forested for tanks.

The neutral Netherlands surrendered within a week; the white flag being waved after the intense bombing of Rotterdam had claimed the lives of 1,000 civilians. The Allied armies soon withdrew from Belgium too under Plan D, a strategy to let Belgium be invaded before beginning the fight back. The French and British were under the command of Generals Pierre Billotte, Alphonse Georges and Maurice Gamelin, who were constantly at odds with each other. The French in particular were poorly organised, the result of

> "THE FRENCH IN PARTICULAR WERE POORLY ORGANISED, THE RESULT OF TOO MUCH MONEY AND ATTENTION BEING SPENT ON THE MAGINOT LINE"



The Dunkirk spirit helped stiffen British resolve as the country now stood alone against Nazi Germany who turned their attention to an invasion of the British Isles

too much money and attention being spent on the Maginot Line, which was simply outflanked by the Germans. This coupled with poor communication lines, obsolete tactics and a poorly trained and poorly equipped BEF, left the Allies exposed.
On 16th May, Brussels had fallen. The British and French forces were being pushed further west and there was real concern that the dual Wehrmacht attack through the Low Countries and the Ardennes would split the Allied forces in two. Between 16th and 21st May, German panzer divisions sped rapidly through France, making up 80 kilometres of ground as the British and the French carried out a fighting retreat. Army Group A now held three vital bridgeheads over the River Meuse as the Germans poured further and further west. With the Battle of France seemingly lost already, plans for the evacuation of the BEF got underway, a massive shock to Churchill who, with little communication on the events, had expected the BEF to hold its ground.

Despite their overwhelming success, the German panzers were in need of repair. On 23rd May, Commander Gerd von Rundstedt requested permission for a halt from Hitler who agreed with fears that the front, which is now was as far west as the Somme, could become overextended. This gave the BEF valuable time to begin the evacuation. The three day respite was short lived as the port of Boulogne fell on 25th May. The Allied armies were getting squeezed to the coast and the next day Operation Dynamo was ordered. Devised by Vice-Admiral Bertram Ramsay and directed from his headquarters in Dover, the

HITLER'S HALT ORDER

The infamous order to halt the advance of the German panzers at 11.42am on 24th May was controversial. The command was given to prevent the German lines from becoming overextended and the belief that tank tracks may struggle in boggy coastal terrain. It gave the BEF a window in which to form a defence around Dunkirk and then up the scale of the evacuation. The order only lasted for three days but this was crucial in allowing the Allies to recover and the Germans to lose momentum. Hitler's order had a mixed response from his generals and it remains to be seen whether the precaution was essential. Either way, as the German panzers were only less than 30 kilometres away from Dunkirk, a further push could have altered the outcome of Operation Dynamo.

The Dunkirk spirit helped stiffen British resolve as the country now stood alone against Nazi Germany, who turned her attention to the planned invasion of the British Isles

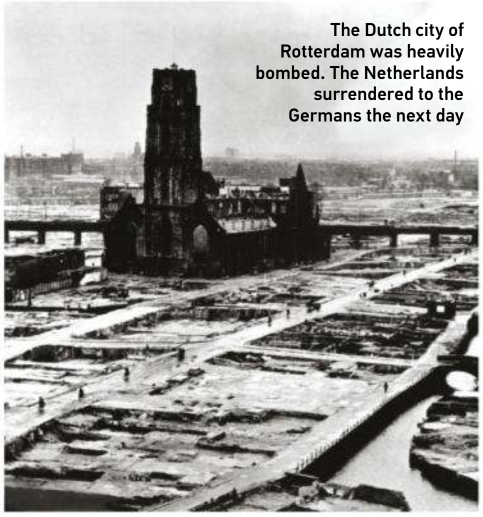
> **“THE HURRIED WITHDRAWAL MEANT TROOPS HAD TO WADE INTO THE COLD WATER OF THE CHANNEL, AS DEEP AS THEIR NECKS”**

withdrawal had been mooted since 20th May and was expected to save, at most, 45,000 men. It began at 7pm that evening. On the continent, the BEF were led by Lord Gort, who had withdrawn to Dunkirk without informing his French or Belgian allies. Initially, the operation was only intended to be a partial evacuation as there was still hope that the majority of the BEF would be able to join with the remainder of the French armies in a counterattack. This belief was a vain hope more than anything and aside from an attack on Arras on 21st May, which did little except buy a bit of time, the British and French were still engaging in a fighting retreat.

For the evacuation, the British mustered a flotilla of 1,000 vessels. Beside the Royal Navy destroyers were an assortment of civilian vessels. Manned by a mixture of civilian and navy crews, cross-channel ferries, pleasure steamers and cabin cruisers were all readied for the journey across the Channel. These ‘little ships’ (the smallest of all was the tiny 4.4 metre long Tamzine) comprised a volunteer force that demonstrated the British fighting spirit. 900 in all made the journey in a story that has since become historical legend. Overnight on the 26th May, 8,000 BEF troops were safely evacuated. The hurried withdrawal meant troops had to wade into the cold water of the Channel, sometimes as deep as their necks, for them to reach the smaller boats that would then ferry them to the larger vessels in the flotilla. As more and more companies made it to the coast, lines of men began to litter the beaches, awaiting the next vessel out of Dunkirk. The next day, Calais fell to the Germans as the pressure started to increase on the evacuation to get as many of the BEF as possible back to Britain before the blitzkrieg made it to the coast. 25,000 soldiers departed overnight on the 27-28th May as the withdrawal picked up more momentum. The port of Dunkirk had been reduced to ruin by the Luftwaffe so the extraction had to be done from the beaches, although British destroyers were at points able to utilise a long causeway called the Eastern Mole at the entrance of Dunkirk harbour. This had deeper water that they could sail into without fear of running aground and becoming vulnerable to German attack.

The defensive perimeter around Dunkirk was getting smaller by the day but in a turn of events, the German land attack stopped. Wary of the prospect of losing more men to the French garrison protecting the beaches, Hitler instructed Göring’s Luftwaffe to finish the job. The coast was bombed heavily as Stukas and Dorniers strafed the beaches with machine gun fire. Although the BEF were sitting ducks, poor coordination, adverse weather conditions and the sand deadening the impact of bombs prevented the Germans from landing a potential death blow on the BEF. The RAF also helped matters. Often criticised for their lack of input during the events of Dunkirk, they managed to down around 100 Luftwaffe aircraft, four German planes for every British plane, but could not stop the majority of the bombing. Göring failed to complete the task assigned to him and not for the last time in the war.

On the final day of May, it was Gort’s turn to leave France and 68,000 men had now been safely evacuated. Many of the troops had spent days huddled on the beaches but slowly and surely the withdrawal was succeeding. Both the destroyers and the little ships were unable to take any heavy equipment on board so the majority of BEF vehicles and heavy weaponry was left strewn across the shoreline. This loss of vehicles actually caused a shortage in Britain that lasted until 1941. By June, the evacuation started to become more strained. The German air assault was becoming



The Dutch city of Rotterdam was heavily bombed. The Netherlands surrendered to the Germans the next day

THE MIRACULOUS ESCAPE FROM FRANCE 1940

10th May

THE WESTERN FRONT RE-OPENS

The Phoney War ends nine months after the invasion of Poland as the Wehrmacht cross the border into Belgium. Neville Chamberlain resigns as Prime Minister.

14th May

BOMBING OF ROTTERDAM

The Dutch city of Rotterdam is heavily bombed with the Netherlands surrendering to the Germans the next day.

16th May

BELGIAN WITHDRAWAL

Allied armies retreat from Belgium after the fall of Brussels, fearing that they will be caught in a pincer by the dual German advance from the north and the south.

20th May

OPERATION DYNAMO

Plans for the evacuation get underway as the Wehrmacht armoured divisions make up 80 kilometres of ground in under a week. A French counter-attack on Arras holds the Germans off.

23rd May

HALT ORDER CALLED

Hitler’s calls a stop to the panzer advance with the front now only 30 kilometres from Dunkirk. This gives the BEF vital time to begin the evacuation.

26th May

THE EVACUATION BEGINS

The day after Boulogne falls, 8,000 troops are taken back across the Channel overnight. The next day Calais falls as the race to leave France becomes a priority.

BEF commander Lord Gort takes his leave of Dunkirk, one of 68,000 men now evacuated

more devastating by the day as the port became blocked by the wrecks of sunken ships. The evacuation was now restricted to just hours of darkness. It wasn't just the BEF fleeing across the Channel anymore either. The British Tommies were now joined by French and Belgian soldiers, who had joined the evacuation, eager to reach the safety of Britain to regroup. Previously, only BEF soldiers had been allowed to leave on the boats but it was now a full Allied operation. On the 3rd June, the final men stepped onto the boats and slipped away into the darkness of the Channel. The evacuation was complete. On 4th June, Churchill addressed the House of Commons at 3.40pm. He praised the achievements of Dunkirk but warned that "wars are not won by evacuations". The address culminated in one his most famous speeches: "we shall fight on the beaches, we shall fight in the landing grounds, we shall fight in the fields and in the streets, we shall fight in the hills; we shall never surrender"; the first of many passionate speeches to the House.

The German Sixth Army entered Dunkirk the same day as Churchill's resolute words rang around parliament. The beaches were strewn with corpses of the soldiers who hadn't made it, victims of Luftwaffe machine guns. The Führer's gaze had already turned to Paris and the remainder of France, confident that Britain, even with this successful evacuation completed, would soon capitulate after the loss of its major ally. The following day the Wehrmacht marched south towards Paris as 5 million French refugees fled south in search of safety. Wary of what had already happened to Rotterdam and Warsaw, the French capital was declared an open city and taken with little resistance. On 22nd June the Battle of France was over, the peace treaty signed at Versailles, where just 22 years earlier, France had sat at the table of victors of the Great War. Dunkirk was a huge feat, but it wasn't without loss. The Luftwaffe sunk six British and three French destroyers, and 161 of the brave little ships were now at the bottom of the Channel. In total 217 Allied vessels were sunk and 177 Allied aircraft were downed. The little ships had done their bit but it was ultimately the 39 British and French destroyers who ferried two-thirds of the men off the beaches. In total, 340,000 British, French, Belgian and Canadian troops had been evacuated to safety from Dunkirk and a total of 558,000 from ports all across France.

Britain was down but not out. The failure of the BEF to stem the Wehrmacht advance was testament to the strength of the blitzkrieg but also advertised how ill-prepared the British and French were for this lightning war. Dunkirk could have been a failure but this successful withdrawal of troops gave hope to what was left of the western Allies to fight on. It may not have been a victory but critically for Churchill, it hadn't been a rout. Newspapers across Britain were hailing it as a miracle but there were negatives. Soldiers returned with low morale, disheartened that they simply could not cope with the strength of the German panzers and convinced that the invasion of Britain was not far off. There were even reports of desertion and infighting at Dunkirk with British soldiers forcing their French counterparts off the boats. This is known as the myth of Dunkirk, that the evacuation was deemed much more of a success than it actually was.

The facts are that if the evacuation was not made, Britain would have had huge numbers of POWs and would have been on the verge of reluctant peace terms with Hitler. As Hitler had his photo taken in front of the Eiffel Tower, the plans for the invasion of mainland Britain, were underway. The French General Weygand remarked that "in three weeks, England will have her neck wrung like a chicken." The battle for France was over and the battle for Britain was about to begin.

Evacuations weren't just limited to Dunkirk; Allied soldiers were taken back to Britain from many French towns

28th May

19,000 MORE

As the perimeter around Dunkirk is held, 19,000 more BEF soldiers make their escape but the majority of heavy equipment is left scattered across the beaches.

31st May

GORT LEAVES

BEF commander Lord Gort takes his leave of Dunkirk, one of 68,000 men now evacuated.

1st June

OVERNIGHT WITHDRAWAL

As the Luftwaffe bombardment escalates, evacuations are limited to just night-time hours under the cover of darkness.

3rd June

THE FINAL NIGHT

The final night of the evacuation and 340,000 British, Belgian and French troops have now been saved.

4th June

GERMAN DUNKIRK

Just one day after the final Allied troops have made their escape, German soldiers enter Dunkirk and claim the port for their own. Churchill makes a rousing speech to the House of Commons.

5th June

THE BATTLE OF FRANCE RESUMES

Turning south, Hitler orders the Wehrmacht to invade the remainder of northern France and to take any remaining soldiers prisoner.

10th June

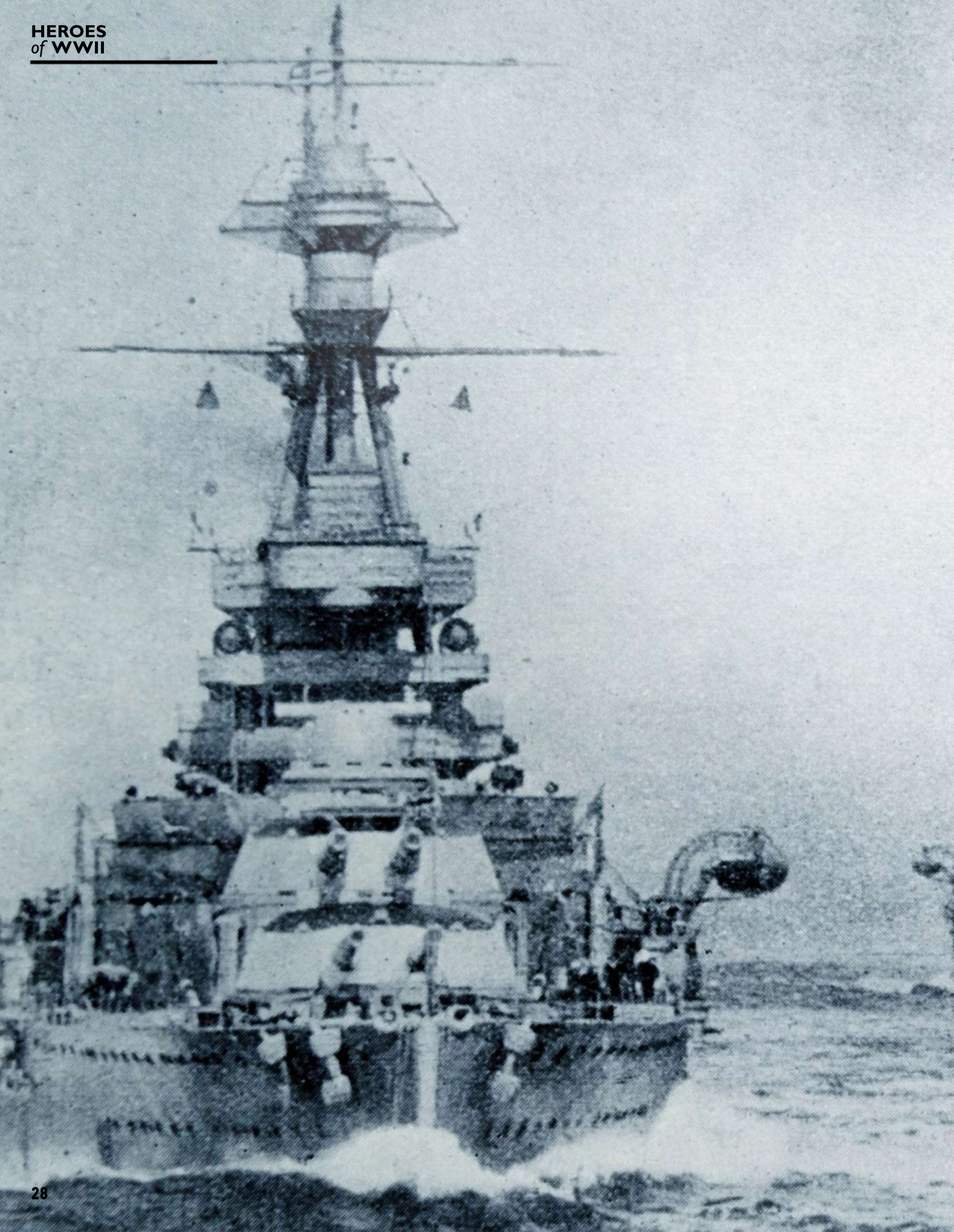
FRENCH GOVERNMENT MOVED TO TOURS

With Paris now threatened, the French Government leave Paris to set up a new base in Tours.

22nd June

FRENCH SURRENDER

Hitler orders peace terms and the French agree, signing the documents at Versailles. The Battle of France is over.



THE LAST LINE OF DEFENCE

While the courage of Britain's fighter pilots secured victory in the skies, the ultimate threat of a German invasion was held at bay by the Royal Navy

WORDS **BEE GINGER**

Following the fall of France in June 1940, the Royal Navy fought to maintain its command of the seas against German invasion. The Battle of Britain, which lasted from July to October of that year, marked the first defeat of Hitler's military forces. The Führer had hoped the British Government would seek a peace agreement with Germany, but this was not forthcoming, so Hitler was forced to prepare for Operation Seelöw (Sealion), the code name for his plan to invade Britain. The aim of the operation was to eliminate the Royal Air Force, seal off the Royal Navy from its intended landing areas, destroy all units along the British coastline and prevent submarines from attacking the German landing fleet.

Since the mid-18th century the Royal Navy had been the world's most powerful fleet, playing a key role in the establishment of the British Empire. It was also the largest, with more than 1,400 vessels to its name. It provided critical cover for Allied convoys during the early stages of World War II and was a major deterrent to a German invasion of Britain.

Much of the Royal Navy's fleet was engaged in the Mediterranean and Atlantic by the summer of 1940, a large proportion having been dispatched to support Operation Menace in Dakar, West Africa, (a mission that saw the Allies fail in their attempts to capture the port). Even so, the Home Fleet

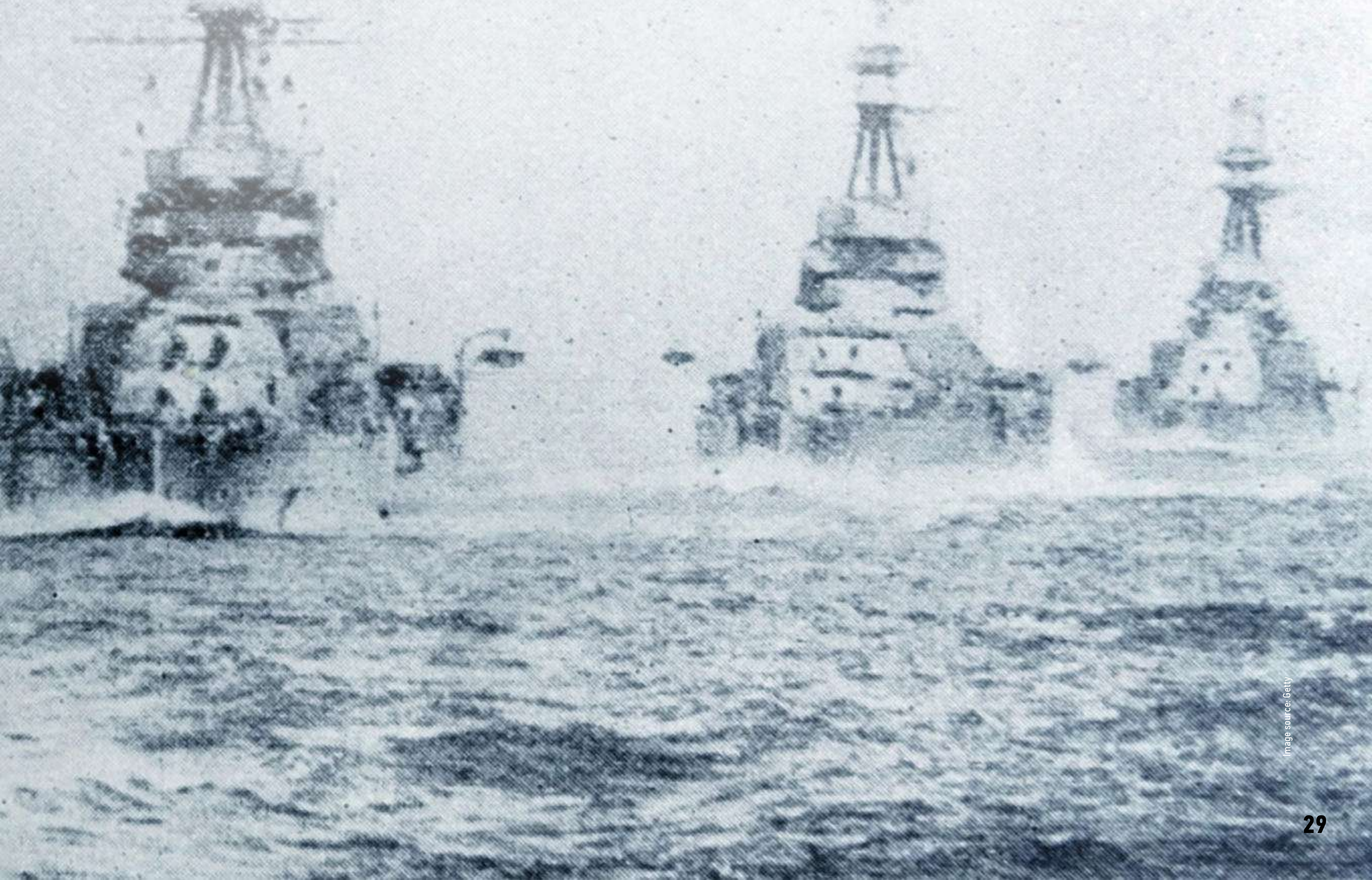
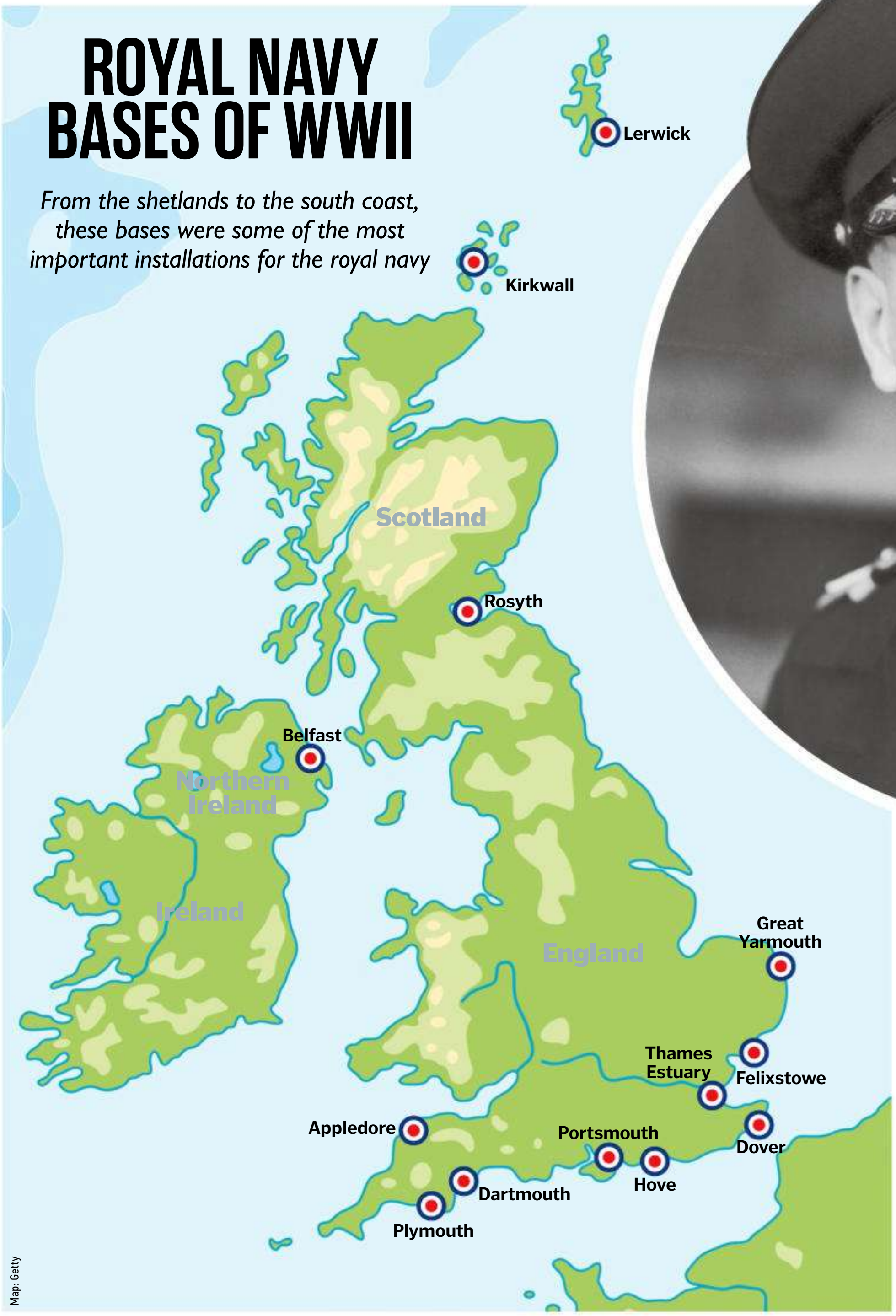


Image source: Getty



ROYAL NAVY BASES OF WWII

From the shetlands to the south coast, these bases were some of the most important installations for the royal navy

Map: Getty

Image source: Getty

Grand Admiral Erich Raeder, head of the Kriegsmarine during WWII until his resignation in January 1943

guarding Britain's shores remained a formidable opponent, a far superior fighting force to its German counterpart, the Kriegsmarine.

The German fleet had suffered huge losses in April 1940 during the Norwegian campaign, with a number of destroyers and light cruisers sunk. These setbacks, combined with the lack of preparations for a full-scale amphibious assault on Britain, forced Hitler's naval commanders to adapt. Were the invasion to be greenlit, the Kriegsmarine would need to use river barges as landing craft. However, there were not enough of them, and they would be extremely vulnerable to attack. Yet, with U-boats unsafe in the shallow waters of the English Channel, and lacking in the specified landing equipment that such a vast undertaking required, the Germans would have to persevere with their cumbersome barges.

> **"IF GERMANY HAD ATTEMPTED TO CROSS THE CHANNEL, THE AXIS SHIPS WOULD'VE FOUND THEIR PASSAGE BLOCKED BY FLOATING MONOLITHS"**

Known as Kampines (and the slightly smaller version, the Peniche), they were to be transferred from the Rhine River to Calais to be converted. While 2,400 were assembled and modified with ramps, only 800 of the fleet were self-powered. This meant the remaining barges would have to be towed, but they could only travel at an excruciatingly slow three kilometres (two miles) per hour. Exposed by their lack of speed, the barges would need to be defended from potential British assaults, but many of the ships capable of holding off the enemy were now rusting at the bottom of the North Sea.

The Royal Navy suffered from no such dearth in ships, armed as it was with 700 patrol craft, 200 of which were already off the coast of France every night on picket duty, not to mention the destroyers it could call upon. If Germany had attempted to cross the Channel, the Axis ships would have found their passage to the landing sites (scheduled to include Dover, Portsmouth and Ramsgate) blocked by these floating monoliths.

Bristling with an array of guns, each of the Royal Navy's destroyers carried 40 depth charges, which were filled with between 600 and 800 pounds of Amatol, a highly explosive mix of TNT and ammonium nitrate, as well as a complement of torpedoes. A slow-moving barge packed with soldiers and horses would have proved easy pickings. But, imposing as these ships were, they were not indestructible.

Seven British destroyers had been lost during the campaign in Norway, while six had been lost and 19 damaged during the miraculous Allied escape at Dunkirk. As a result, some of the Royal Navy's most valuable assets had been temporarily withdrawn from service. By the end of 1940, 30 Royal Navy destroyers would be lost.

In the event of a German crossing, the Royal Navy would have been able to summon an almighty fleet to meet it. Alongside destroyers it

The German heavy cruiser Blücher sinks in the Oslofjord after being hit by the naval guns of the nearby Oscarsborg Fortress

Image source: Getty

also readily deployed cruisers, sloops, corvettes and of course submarines. With the alert put out across the airwaves, Britain's submarines would have slipped into the depths of the Channel to strike from below as the surface fleet fanned out above. Even if the Luftwaffe had managed to secure aerial supremacy over Britain, its naval counterpart would have faced a virtually impossible task in attempting to do the same at sea. In the end it was never asked to try. Operation Sealion never left port.

In 1944, Grand Admiral Raeder, the head of the Kriegsmarine, revealed the main reasons for the invasion's failure to launch in a document catchily titled *Brief Statement of Reasons for Cancellation of Invasion of England*, prepared by naval staff.

"Owing to the weakness of our naval forces, there could be no effective guarantee against the enemy breaking into our area of transports despite our mine barrages on the flanks and despite our air superiority."

In addition to this, the German High Command had also been previously warned that "the weather in the North Sea and Channel during the second half of September is very bad..."

Both Raeder and Göring (Commander-in-Chief of the Luftwaffe), neither of whom had ever fostered any real enthusiasm for the plan, were mightily relieved when it was finally shelved by Hitler on 17 September 1940. He did so in the wake of the Luftwaffe's failure to destroy the RAF in the skies, but the menace of the Royal Navy also weighed heavily on his mind as he postponed indefinitely any dreams of landing Wehrmacht troops on English sand.

Some historians believe the Battle of Britain to have been a naval victory due to Germany's inability to confront and defeat the Royal Navy. While the undoubted heroism of the pilots who scrambled to defend Britain in brutal dogfights has been hailed ever since, the argument that it was ultimately the presence of the navy that deterred Hitler from putting Sealion to the test is a convincing one. After all, the Luftwaffe had enjoyed complete aerial dominance at Dunkirk and yet failed to inflict any significant damage on the Allied ships at their mercy. What hope would they have had against a fleet of hundreds armed to the teeth directed by men fighting in defence of their homeland?

One theory as to why the Royal Air Force took the lion's share of the glory is that its image could be used to easily manipulate the opinion of the then-neutral Americans. In the hands of an orator as skilled as Winston Churchill, the concept of a small band of courageous pilots holding back the seemingly relentless Nazi tide was a powerful image indeed. "Never in the field of human conflict was so much owed by so many to so few" is a line from his August 1940 speech that has since passed into immortality.

Yet when it comes to the Battle of Britain, the real, harsh reality of an event that has defined British history ever since, it seems fitting to allow the final word to RAF flying ace Wing Commander Hubert Raymond Allen.

"It was sea power that ruled the day in 1940, and fortunately Britain had a sufficiency. The air situation was, of course, important, but by no means fundamental. Without doubt the 500 or so section, flight and squadron leaders of Fighter Command earned their laurels. But the real victor was the Royal Navy, the Silent Service."

Flanked by two naval officers, Adolf Hitler stands on board a Kriegsmarine warship

Image source: Getty

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THEIR FINEST HOUR

As Britain stood alone against Nazi Germany, young fighter pilots of the Royal Air Force defeated the vaunted Luftwaffe in the pivotal Battle of Britain

WORDS **STUART HADAWAY**

The Nazi conquest of France and the Low Countries was swift and decisive. In a matter of weeks, the British Expeditionary Force had been ejected from the European continent at Dunkirk and Adolf Hitler stood on the brink of total victory in World War II.

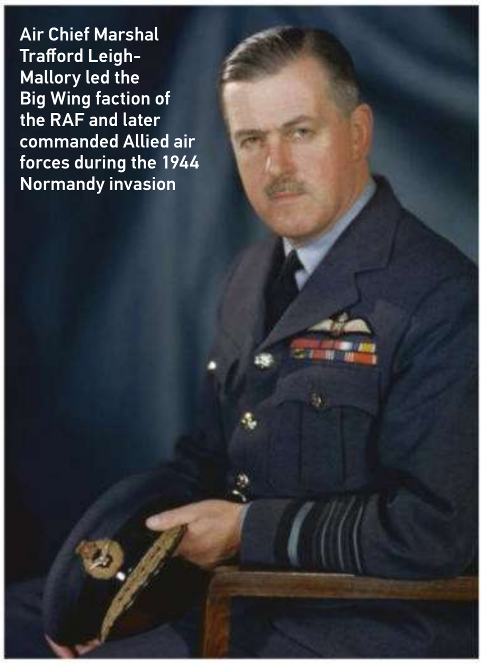
Roosevelt sought to rectify these problems with a range of domestic programs called the New Deal. It focused on what were known as the 'three Rs', relief, recovery and reform. Relief was the immediate action that was taken to halt further economic failure. Recovery saw temporary programs implemented to restart consumer spending and reform saw more permanent programmes put in place to avoid another crash and safeguard savings. With these actions the American people began to see hope in the new Democratic Party. The Republicans under Hoover had said the worst was over and only hard work and determination would see the United States through, but these had actually turned out to be either lies or woeful predictions.

One significant challenge remained in the West, however. As German troops paraded down the Champs Elysées in Paris, Hitler and his generals contemplated the invasion of Great Britain, the island nation that now stood alone against the Nazi juggernaut in the summer of 1940. For Britain, the situation was grave.

On 18th June, Prime Minister Winston Churchill addressed the House of Commons with a warning that the Battle of France was over and the Battle of Britain was about to begin. "Let us therefore brace ourselves to our duties," he intoned, "and so bear ourselves that if the British Empire and its Commonwealth last for a thousand years, men will still say, 'This was their finest hour.'"

German troops and tanks were poised along the coastline of France. Officers gazed across the English Channel at the white cliffs of Dover, a scant 20 miles distant. Hitler and his senior commanders knew that the invasion and conquest of Great Britain would be their sternest challenge to date. However, they were brimming with confidence as they planned Operation Sea Lion, marshalling barges from Germany and across occupied Europe to ferry combat troops to Britain's shores and considering the prospects for holding the might of the Royal Navy and the Royal Air Force at bay.

One fact was plain. Soldiers could not cross the Channel without the threat of air attack and Britain's naval might could not be restrained until the Luftwaffe owned the skies over land and sea. Control of the air was a prerequisite to any successful invasion, and Reich Marshal Hermann Göring, chief of the Luftwaffe, assured Hitler that his fighters and bombers would sweep the RAF aside within a few weeks.



Air Chief Marshal Trafford Leigh-Mallory led the Big Wing faction of the RAF and later commanded Allied air forces during the 1944 Normandy invasion

Göring gathered more than 1,200 Messerschmitt Me-109 and twin-engine Me-110 fighters and 1,300 bombers for the air assault. The nimble Me-109 was heavily armed and fast; however, fuel consumption as German squadrons flew from bases located from Norway to the Cotentin Peninsula restricted actual time over Britain and the Channel to only about 20 minutes during a typical sortie. The Luftwaffe bombers included a mixed bag of Heinkel He-111, Dornier Do-17, and Junkers Ju-88 aircraft capable of carrying only relatively light bomb loads. The Junkers Ju-87 Stuka dive bomber, a terror weapon that had been effective as flying artillery during the German Army's blitzkrieg across Europe, was quickly proven unsuited for a sustained bombing campaign. So many of the lumbering Stukas were lost to Royal Air Force fighters that the planes were quickly withdrawn from combat.

Opposing the vaunted Luftwaffe, the RAF mustered roughly 700 frontline Hawker Hurricane and Supermarine Spitfire fighters along with other somewhat obsolescent types under the control of RAF Fighter Command led by Air Chief Marshal Hugh Dowding. The Hurricane was slower than the Spitfire, so a cooperative tactic effectively emerged. While the Hurricanes primarily targeted the bomber formations, the sleek, powerful Spitfires matched up with the Me-109s in epic dogfights that have come to symbolize the desperation, heroism, and sacrifice of the RAF during the Battle of Britain.

DEFENDING AIR AND ISLAND

As the threat of invasion loomed, British air defence preparations were admirable. Fighter Command was divided into four defensive sectors, and group headquarters were established to dispense real-time intelligence as Luftwaffe air raids materialized. Headquartered at Uxbridge, Middlesex, No. 11 Group defended London and southeastern England and bore the brunt of

TIMELINE 1940

4th June

MIRACLE AT DUNKIRK

The evacuation of the British Expeditionary Force, the bulk of British troops on the continent of Europe, and other Allied soldiers is completed at the port of Dunkirk.

10th July

THE BATTLE BEGINS

The first engagements of the Battle of Britain occur as Luftwaffe planes attack shipping in the English Channel and draw RAF fighters into the air.

15th Aug

THE GREATEST DAY

RAF fighters claim 75 German planes and lose 30 to enemy fighters while defending against heavy bombing raids on their precious airfields.

17th Aug

BRINGING BOMBER PILOTS

RAF Fighter Command calls for Bomber Command pilots to transfer in order to make good the losses sustained thus far in heavy air combat.

18th Aug

THE HARDEST DAY

Called Black Thursday by the Germans, both sides lose heavily during continuous air battles. Losses among Stuka dive bombers are so severe that the planes are withdrawn from combat.

24th Aug

ERRANT BOMBING

Apparently off course, Luftwaffe bombers drop their deadly cargoes on London, hitting the centre of the city, residential areas, factories, and the docks of the East End.

DEFINING MOMENT

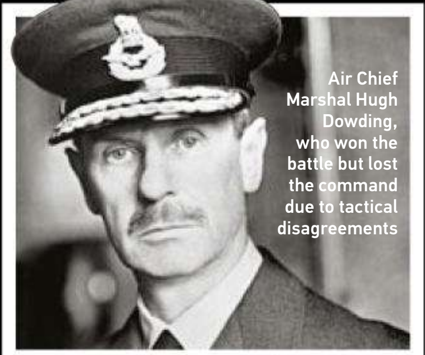
DER ADLERTAG

13th August 1940

On Eagle Day, the Luftwaffe stages large-scale raids against targets in England, including radar stations and airfields. RAF fighters shoot down 46 German planes.

RIVALRY IN THE SKIES

Air Chief Marshal Hugh Dowding is rightly given the lion's share of credit for the RAF victory in the Battle of Britain. However, for Dowding it came at personal cost. In the midst of the fighting, a difference in tactical perspective emerged within the highest echelons of the RAF. Dowding pursued a Fabian strategy, avoiding major air battles that might cripple Fighter Command beyond repair. Meanwhile, another RAF faction, the Big Wing advocates, championed large, set-piece encounters with the Luftwaffe. While Dowding was supported by Air Vice Marshal Keith Park of No. 11 Group, their opponents were powerful, including Air Chief Marshal Trafford Leigh-Mallory of No. 12 Group. The debate rages, but on 24th November, leadership of Fighter Command passed to Marshal of the Royal Air Force Sholto Douglas, a Big Wing supporter.



Air Chief Marshal Hugh Dowding, who won the battle but lost the command due to tactical disagreements

the Nazi air onslaught. Number 12 Group at Watnall, Nottinghamshire, defended Wales and the Midlands, while No. 10 Group covered southwestern England and No. 13 Group was charged with the defence of Scotland and northern England.

As the Battle of Britain developed, the RAF came to fully appreciate the value of a new early warning device called radar. A system of radar posts called Chain Home effectively eliminated any hope the Germans had in the element of surprise. Even while under direct Luftwaffe attack, the most sophisticated radar network in the world continued to function.

THE BATTLE JOINED

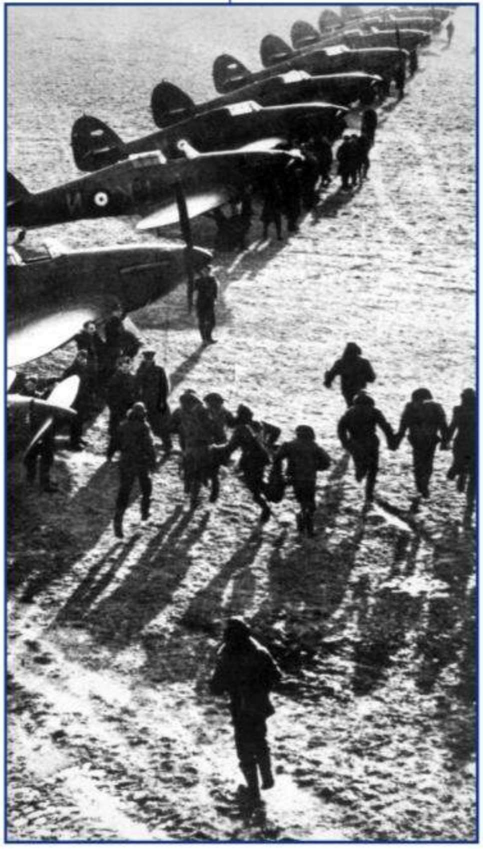
Hitler shared Reich Marshal Göring's optimism for an easy aerial victory and issued Directive No. 16 tentatively scheduling Operation Sea Lion for 15th August, 1940, just over a month after the effort to eradicate the RAF was undertaken. The Germans referred to the opening phase of the Battle of Britain as Kanalkampf, or the Channel Battle. The earliest targets of the Luftwaffe air offensive were shipping and barge traffic in the English Channel, port facilities at Dover and other harbours on the southeastern coast of England, and aircraft manufacturing facilities.

Marauding German bombers sank numerous British merchant ships during more than a month of Kanalkampf raids, and the Royal Navy relocated most of its ships and personnel westward from Dover to Portsmouth. On 25th July, Stukas ravaged a convoy transporting coal. When RAF fighters intervened, the Germans lost 16 aircraft and the British seven. Two weeks later, German bombers sank four ships and damaged six others in a 20-ship convoy. RAF fighters shot down 31 German planes but lost 19 of their own.

At first, the Admiralty directed that all convoys embark only at night, but subsequently the decision was made to discontinue Channel convoys and transport cargo by rail as much as possible. Still, despite pitched dogfights and daily encounters, the Luftwaffe failed to sufficiently erode the defensive strength of the RAF.

DER ADLERTAG

Round two of the preparation for the invasion of England was postponed several times due to poor flying weather. Finally, 13th August, 1940, was designated as Der Adlertag, or Eagle Day. The objective of the renewed Luftwaffe offensive was the destruction of RAF Fighter Command during days of unrelenting air combat. Still confident of victory, Luftwaffe pilots often sang a jaunty tune with the lyric, "Wir fliegen gegen England," or "We are flying against England."



DEFINING MOMENT

"TO SO FEW"

20th August 1940

Prime Minister Winston Churchill tells the House of Commons, "Never in the field of human conflict has so much been owed by so many to so few."

Although the Germans were aware that Chain Home radar stations provided the RAF, particularly Air Vice Marshal Keith Park's No. 11 Group, with some measure of early warning, they never fully grasped the significance of the network in RAF fighter deployment and readiness to defend against air raids. Hitting the radar stations was, however, an initial component of Adlertag and the following two weeks.

The continuing effort to bring the RAF to its knees included the systematic bombing of its airfields scattered across southern and central England, the destruction of the 300-foot towers and installations of the Chain Home radar network, and the elimination of the planes and pilots of Fighter Command once and for all.

During Adlertag three radar stations were hit by Luftwaffe bombers, knocking them off the air for only six hours as a lack of planned follow-up attacks allowed Chain Home to recover.

25th Aug

RAF RETALIATES

In response to the Luftwaffe bombing of London, 40 RAF bombers attack Berlin, the Nazi capital, causing Hitler to change tactics during the Battle of Britain.

31st Aug

DEBDEN AIRFIELD HIT

Hit by at least 100 German bombs, RAF Debden, located in Essex northeast of London, endures its third Luftwaffe air raid.

7th Sept

THE BLITZ BEGINS

The Luftwaffe sends 400 bombers escorted by 600 fighters to attack the docks of London's East End. Raids occur around the clock, and later the Luftwaffe switches to nocturnal attacks.

17th Sept

SEA LION DENIED

Aware that the Luftwaffe cannot achieve air superiority over Britain, the RAF, and the English Channel, Hitler postpones and eventually cancels Operation Sea Lion, the proposed invasion of the British Isles.

29th Oct

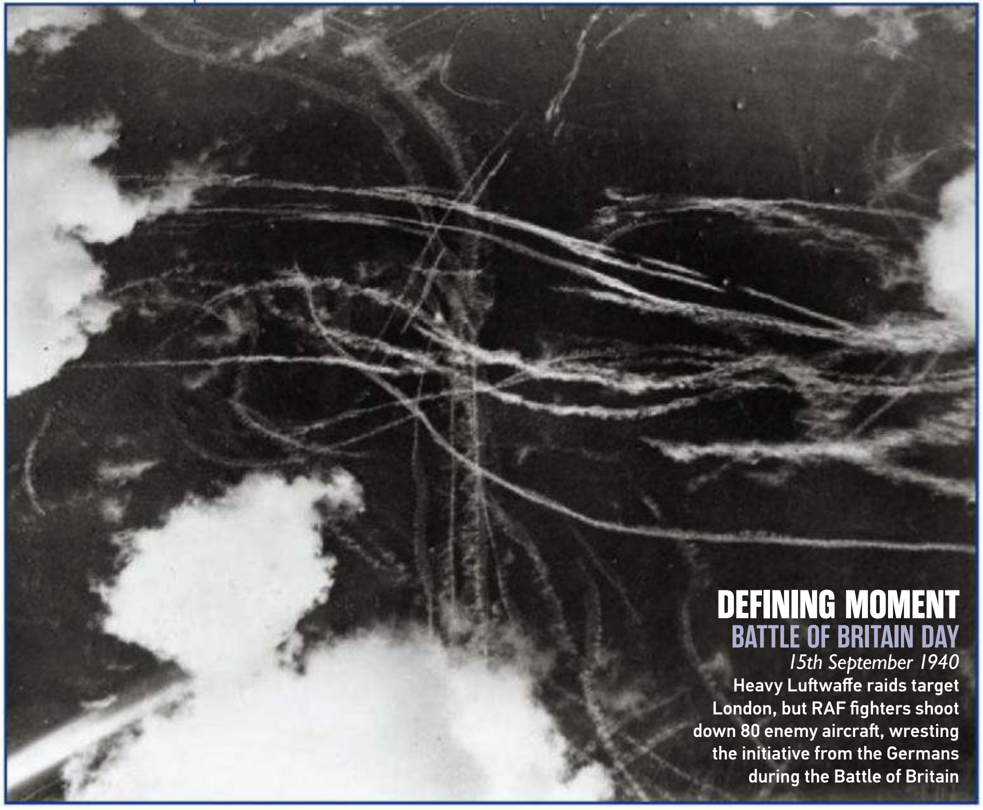
LAST GREAT GASP

Three coordinated Luftwaffe air raids hit London, Portsmouth, and other targets in the last large-scale attacks of the Battle of Britain, although the Blitz continues against British cities.

31st Oct

FINAL VICTORY

Generally accepted as the end of the Battle of Britain, air operations are hampered by bad weather, and Luftwaffe attacks are no longer daily events.



DEFINING MOMENT

BATTLE OF BRITAIN DAY

15th September 1940

Heavy Luftwaffe raids target London, but RAF fighters shoot down 80 enemy aircraft, wresting the initiative from the Germans during the Battle of Britain

Airfields in the south were attacked. On Adlertag the Germans lost 46 planes and the RAF just 13. However, days of intense aerial combat followed.

AIR BATTLES INTENSIFIED

By 15-16th August, the air battles above England had reached fever pitch. The number of combined combatant sorties neared 2,700. Scores of RAF and Luftwaffe planes were seen tangled in the skies. On the 15th, later known as "The Greatest Day," RAF pilots destroyed 75 German planes and lost 30 of their own.

18th August, known to the British as "The Hardest Day" and to the Germans as "Black Thursday," left RAF commanders deeply concerned with the staying power of their planes and pilots while Hitler's confidence in his aerial might was shaken. The Luftwaffe lost 69 planes, the RAF 68. Raids on British airfields continued with telling effect. At RAF Kenley in Surrey, all 10 hangars were demolished. A dozen planes, including 10 precious Hurricanes, were destroyed, and bombs cratered runways.

In ten days of aerial combat from 8-18th August, the RAF lost 175 planes, while Luftwaffe losses reached a staggering 332 aircraft. Although its losses were only about half those of the Luftwaffe, the RAF was strained to breaking point. Some replacement pilots were procured from Bomber Command, and the relentless pace of new fighter production peaked.

On 20th August, at the height of the great air battle, Churchill rose once again in the House of Commons. He offered, "The gratitude of every home in our Island, in our Empire, and indeed throughout the world, except in the abodes of the guilty, goes out to the British airmen who, undaunted by odds, unwearied in their constant challenge and mortal danger, are turning the tide of the World War by their prowess and by their devotion. Never in the field of human conflict was so much owed by so many to so few."

REPRIEVE AND RESURGENCE

The prime minister's stirring words touched the people of Britain, the fighting pilots of the RAF who came to be known as "The Few," and the free world. Still, the issue remained in doubt. By the end of the month, six out of seven main RAF bases in southeastern England had been severely damaged. Nevertheless, the RAF had given Hitler pause. On 3rd September, Operation Sea Lion, already postponed once, was delayed another three weeks. While Luftwaffe daylight raids against RAF installations and manufacturing facilities continued, Göring also directed nocturnal attacks against military targets across Britain. However, major cities were not targeted due to the certainty of RAF retaliation against German population centers. On the night of 24th August, a few Luftwaffe bombers drifted off course, dropping their bombs on London. The following night, RAF bombers hit Berlin.

Hitler flew into a rage and directed a new strategy, terror bombing to break the fighting spirit of the British people. On 7th September, German bombers appeared over London in strength. More than 2,000 civilians were killed or wounded. For 57 consecutive nights, the British capital was ravaged.

The Luftwaffe's refocus on British cities did not fully suspend daylight operations. However, Fighter Command was given the opportunity to rest and refit. Then, the turning point in the struggle for air superiority occurred. Two massive raids were launched against targets in Britain on 15th September. The RAF put 300 fighters into the air and shot down 80 enemy planes. The Luftwaffe could not sustain such losses; the number and size of further raids were curtailed. The 15th of September is still commemorated annually as "Battle of Britain Day."

The catastrophe prompted Hitler to cancel Operation Sea Lion indefinitely two days later. He then ordered the barges and other naval craft assembled for the cross-Channel invasion to disperse. By mid-October, it was clear that the Royal Air Force had won the Battle of Britain.

Casualties during four months of aerial combat included nearly 1,600 RAF airmen killed and over 400 wounded with 1,744 planes lost. The Luftwaffe suffered 2,600 dead, 735 wounded, and more than 900 taken prisoner. Nearly 2,000 German planes were destroyed.

APPALLING POSTSCRIPT

Although the Nazi war machine had been slowed in the skies over England, the Luftwaffe continued its terror bombing campaign for months. London was not the only city to suffer the wrath of Hitler and the Luftwaffe. On 14th November, 1940, Coventry was assailed by 400 bombers, killing 568 people and injuring another 1,200. Liverpool, Manchester, Birmingham, and others were subjected to intense air raids. The Blitz, as it came to be known, lasted for months, until May 1941.

By then, Hitler had already concluded that Britain would never buckle under an aerial assault. British cities had burned and crumbled, but the RAF remained resolute. The Führer turned away from the West. Operation Barbarossa, the Nazi invasion of the Soviet Union, was only weeks away. The Battle of Britain was won, but the others were just beginning.

Image: Piotr Forkasiewicz

92
72
20
25
12
25
HASTINGS

Image source: Wiki

THE INDOMITABLE DOWDING SYSTEM

An air defence system developed in the 1930s enabled RAF fighters to win the Battle of Britain

WORDS **MICHAEL E HASKEW**

The towers stood 240 feet high, ringing the eastern and southern coasts of England, their radio waves stretching across the Channel to occupied France. Chain Home, as it was called, employed the world's first operational radar, then known as RDF (radio direction finding), to warn of approaching Luftwaffe air raids during the difficult spring and summer of 1940.

In those dark days, the Nazi wolf was literally at England's door. However, Operation Sealion, the invasion of Britain, could not proceed with certainty until Marshal Hermann Göring's Luftwaffe owned the skies. The fate of the British Empire was decided in the air as Royal Air Force fighter pilots rose to meet the enemy.

Truly, much was owed to the fabled 'Few'. But just as much was owed to one man and his prescience, which led to the development of the world's first integrated air defence system. Air Chief Marshal Sir Hugh Dowding, leader of RAF Fighter Command, recognised as early as the mid-1930s that emerging technology might be coupled with an extensive observation and anti-aircraft ground network to stand against a future Luftwaffe enemy that would outnumber RAF planes more than four to one with the onset of the Battle of Britain.

Members of the Royal Observer Corps scan the sky, tracking a German air raid

Image source: Wiki

FORMIDABLE FORCE MULTIPLIER

Dowding foresaw the need for a force multiplier that would allow the RAF to fend off Luftwaffe air raids with economy of force, sending fighters directly towards incoming enemy aircraft with accuracy. Such a system would curb the need for standing patrols, which would erode RAF combat efficiency, exacerbate the loss of precious resources such as fuel, planes and pilots, and rely heavily on visual contact to identify emerging threats.

The task was daunting, and at times frustrating. During one exercise intended to detect an incoming raid the system failed miserably, and Dowding learned of the approaching planes only when he heard the drone of their engines.

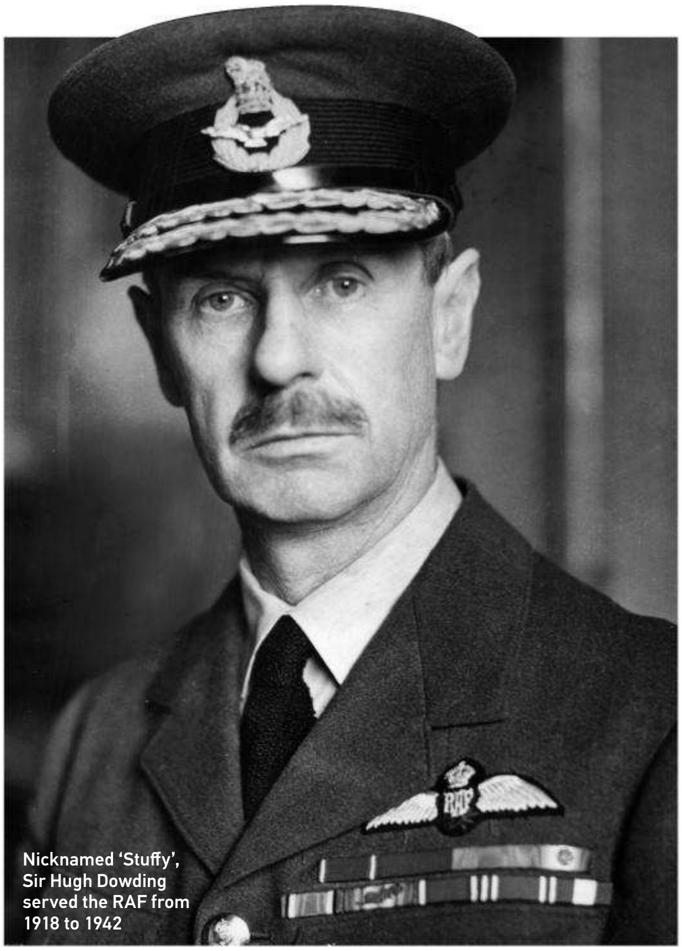
Nevertheless, Dowding and his associates persisted, developing a sophisticated system of early warning that would come to bear his name. The Dowding System may justly be credited with the comprehensive information gathering and dissemination that did, in fact, allow Fighter Command to defeat the Luftwaffe. During the interwar years, when conventional methods were used, mock air raids were successfully intercepted by RAF fighters only half the time at best. During the Battle of Britain, however, the Dowding System proved its worth as successful interceptions soared above 90 per cent.

In addition to Chain Home, Fighter Command constructed an elaborate network to gather, analyse and distribute data on incoming Luftwaffe raids in real time. British air defence was divided into four sectors: 10 Group under Air Vice Marshal Sir Quintin Brand was responsible for Wales and the South West; 11 Group, led by Air Vice Marshal Keith Park, covered London and the South East; 12 Group under Air Vice Marshal Trafford Leigh-Mallory was responsible for part of northern England, East Anglia and the industrial Midlands; and 13 Group, led by Air Vice Marshal Richard Saul, covered Northern Ireland, parts of northern England and southern Scotland. Each of these groups was divided into sectors, their main airfields designated 'Sector Stations' with huts constructed to house an operations room where personnel would direct fighters on courses to intercept enemy planes.

The Chain Home tower at RAF Stenigot stands against the clouds

Image source: Wiki © David Wright

The sequence of events began with Chain Home, its 241-kilometre (150-mile) reach detecting aircraft flying from 1,000 to 30,000 feet. Telephone operators, or tellers, at these RDF stations (56 of which were operational by the end of the Battle of Britain) transmitted their information, including range, bearing, speed and estimated number, to the Filter Room at Fighter Command Headquarters, Bentley Priory, Stanmore, Middlesex. At Bentley Priory the pieces were put



Nicknamed 'Stuffy', Sir Hugh Dowding served the RAF from 1918 to 1942

Air Chief Marshal Sir Hugh Dowding walks beside the king and queen in September 1940

together by teams that organised a comprehensive perspective on the coming Luftwaffe attacks. Tellers passed the information from the Filter Room to the underground Operations Room and simultaneously to the affected groups and sectors, where more operations rooms buzzed with activity.

The raids were tracked on large maps as blocks and arrows indicated the direction of incoming planes as well as the RAF squadrons scrambling from the airfields. At each level from Fighter Command to group to sector the maps became more specific, focused on the area of responsibility. At Fighter Command Headquarters the officers on duty could direct a coordinated effort against multiple threats while looking at the changing maps from a gallery above the pit, where plotters were continually updating the situation using rods to move the blocks across the maps.

At group level, a controller performed the critical function of discerning where to concentrate the available fighters under his supervision as sector commanders were notified by telephone. Sector controllers then ordered individual airfields to scramble, sending pilots rushing towards their cockpits. Within minutes, RAF fighters were airborne and vectored onto their target. They were further tracked utilising new receiver and transponder technology called 'huff-duff' and 'pip-squeak'. Many of the personnel working diligently at each level were members of the WAAF (Women's Auxiliary Air Force).

Although effective, Chain Home was unable to reliably detect incoming aircraft flying below 1,000 feet. Therefore, a supplemental network of 30 smaller stations, dubbed Chain Low, were built on high ground beginning in 1939. In addition, the Royal Observer Corps pitched in as Luftwaffe planes crossed the coastline, watching and reporting back to the stations as raiders flew overhead. Fighter Command also controlled the anti-aircraft units, searchlights and barrage balloons of RAF Balloon Command.

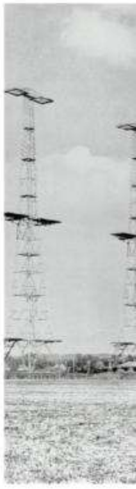
THE PIVOTAL AIR DEFENCE PROGRAMME

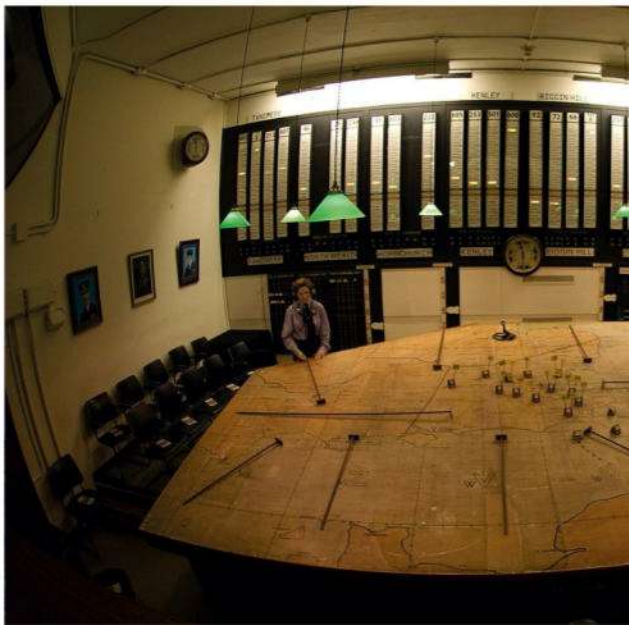
The Dowding System proved a remarkable success. As the Battle of Britain progressed, German airmen reported with increasing alarm that British fighters always seemed to know where they were. Although they were aware of the British use of RDF, the Germans failed to fully comprehend its ability to shape the outcome of the critical battle raging above Britain from July to October 1940. Direct attacks on Chain Home sites inflicted some damage and actually destroyed the Ventnor station on the Isle of Wight, creating a temporary 16-kilometre (ten-mile) blind spot in the network. Göring, most likely unaware of it, failed to exploit the opportunity.

Raids against airfields, where sector operations rooms were initially located, caused numerous casualties among the skilled operators and plotters, particularly at RAF Biggin Hill, prompting the relocation of some centres away from such installations. Relief came when the Luftwaffe switched tactics and undertook the terror bombing of London and other cities, allowing the RAF to make good grievous losses during a critical period in the Battle of Britain.

Conversely, although 11 Group bore the lion's share of defence against the Luftwaffe air assaults, action by 13 Group on 15 August 1940 illustrates the power of the Dowding System well. Two Luftwaffe raids launched from airfields in Denmark and Norway and intended to strike manufacturing facilities from northern Yorkshire to Tynemouth were tracked for at least an hour as they flew across the North Sea. RAF fighter pilots scrambled, reached high altitude with the Sun to their backs and fell upon the enemy formations. Without loss, the RAF fighters scattered the formations and shot down many German planes.

Assessing the success of the Dowding System in his acclaimed *The Second World War* series of books, Prime Minister Winston Churchill wrote in 1949, "All the ascendancy of the Hurricanes and Spitfires would have been fruitless but for this system which had been devised and built before the war. It had been shaped and refined in constant action, and all was now fused together into the most elaborate instrument of war, the like of which existed nowhere in the world."





THE BATTLE OF BRITAIN

In 1940 the Luftwaffe attempted to destroy the RAF, but Britain was ready with several defensive measures

Image source: Wiki

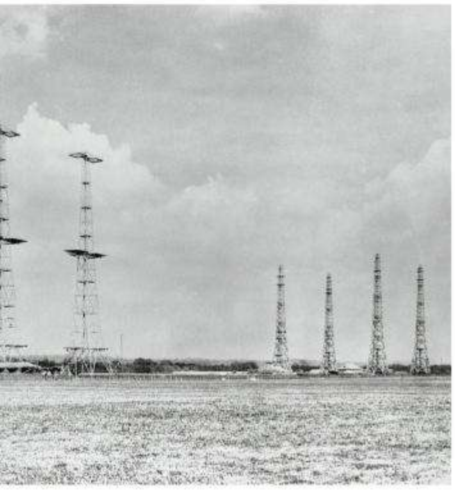


Image source: Wiki

The 11 Group operations room has been preserved in its wartime state

Image source: Wiki © Daniel Stirland

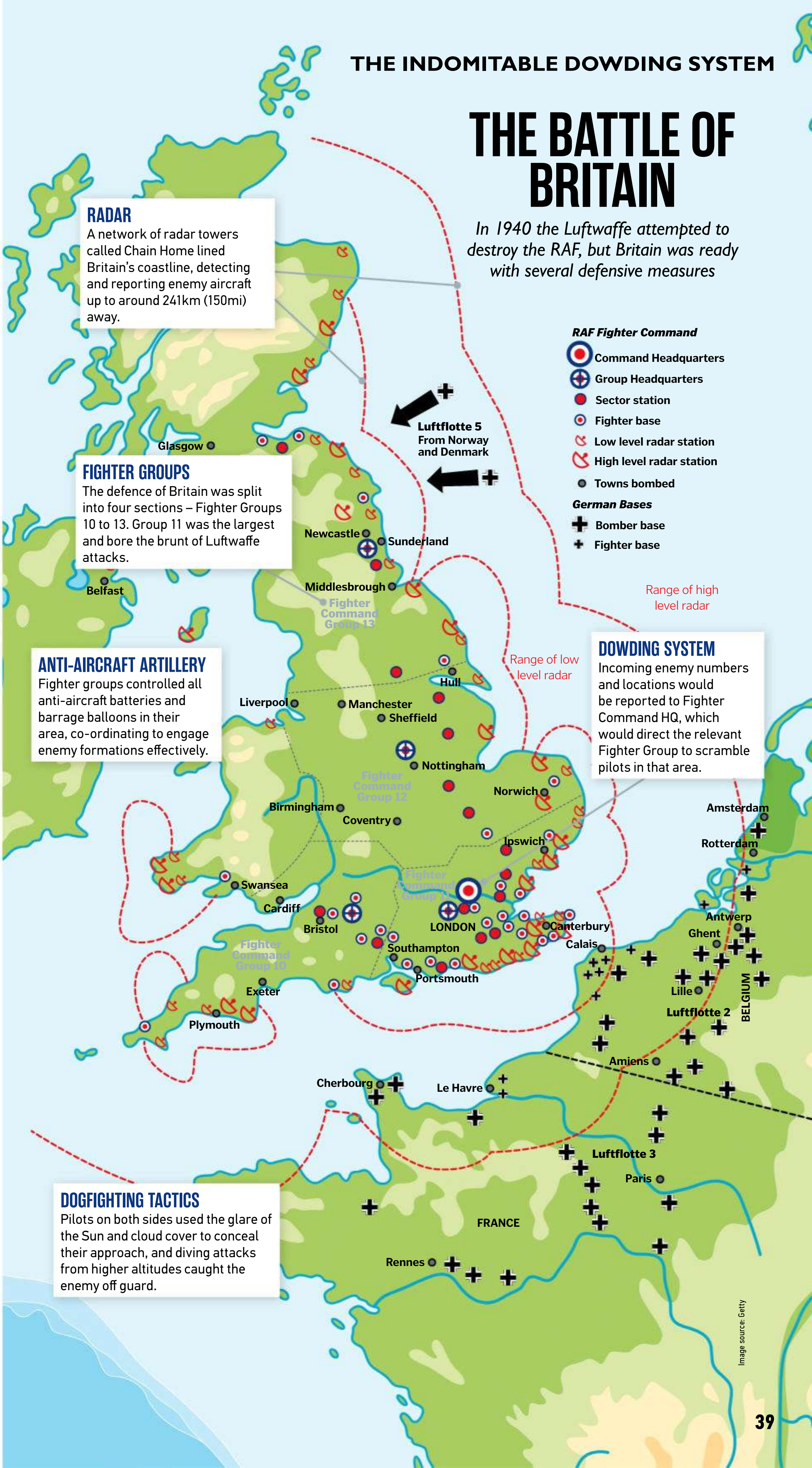

RAF Fighter Command
Command Headquarters
Group Headquarters
Sector station
Fighter base
Low level radar station
High level radar station
Towns bombed
German Bases
Bomber base
Fighter base
Range of high level radar
Range of low level radar
Luftflotte 5
From Norway and Denmark
Glasgow
Belfast
Newcastle
Sunderland
Middlesbrough
Fighter Command Group 13
Hull
Liverpool
Manchester
Sheffield
Nottingham
Fighter Command Group 12
Norwich
Birmingham
Coventry
Ipswich
Swansea
Cardiff
Fighter Command Group 11
Bristol
LONDON
Canterbury
Southampton
Portsmouth
Fighter Command Group 10
Exeter
Plymouth
Calais
Amsterdam
Rotterdam
Antwerp
Ghent
Lille
Luftflotte 2
BELGIUM
Amiens
Cherbourg
Le Havre
Luftflotte 3
Paris
FRANCE
Rennes

Image source: Getty

RADAR

A network of radar towers called Chain Home lined Britain's coastline, detecting and reporting enemy aircraft up to around 241km (150mi) away.

FIGHTER GROUPS

The defence of Britain was split into four sections – Fighter Groups 10 to 13. Group 11 was the largest and bore the brunt of Luftwaffe attacks.

ANTI-AIRCRAFT ARTILLERY

Fighter groups controlled all anti-aircraft batteries and barrage balloons in their area, co-ordinating to engage enemy formations effectively.

DOWDING SYSTEM

Incoming enemy numbers and locations would be reported to Fighter Command HQ, which would direct the relevant Fighter Group to scramble pilots in that area.

DOGFIGHTING TACTICS

Pilots on both sides used the glare of the Sun and cloud cover to conceal their approach, and diving attacks from higher altitudes caught the enemy off guard.

THE FORGOTTEN MANY

'The Few' may have won the Battle of Britain, but they were just the tip of a vast machine. Hundreds of thousands of personnel on the ground made their every move possible

WORDS **STUART HADAWAY**

First, let us get one thing straight: the Royal Air Force won the Battle of Britain. It is true that many other organisations played their part, and would have played a larger one should the Germans have ever attempted to invade. But that invasion never came because the principal precondition established by the Germans themselves – air superiority over the English Channel and southern Britain – was never met. The RAF, and primarily Fighter Command, made sure of this.

However, while pilots confronted and defeated the enemy in the air, their continuing efforts were only made possible by an extensive and complex ground organisation that had been carefully built up since the very earliest days of the RAF's existence.

This organisation fed, equipped and cared for the pilots on the ground and directed their efforts in the air while also keeping their aircraft in flying condition and providing the fuel, ammunition and parts they needed to get off the ground.

Flying Officer (later Air Commodore) Al Deere of No. 74 Squadron recalled, "On-the-spot repairs of damaged aircraft were carried out by our own ground crews, who were magnificent. All night long, lights burned in the shuttered hangars as the fitters, electricians, armourers and riggers worked unceasingly to put the maximum number on the line for the next day's operations. All day too they worked, not even ceasing when the airfield was threatened with attack. A grand body of men about whom too little has been written but without whose efforts victory would not have been possible."

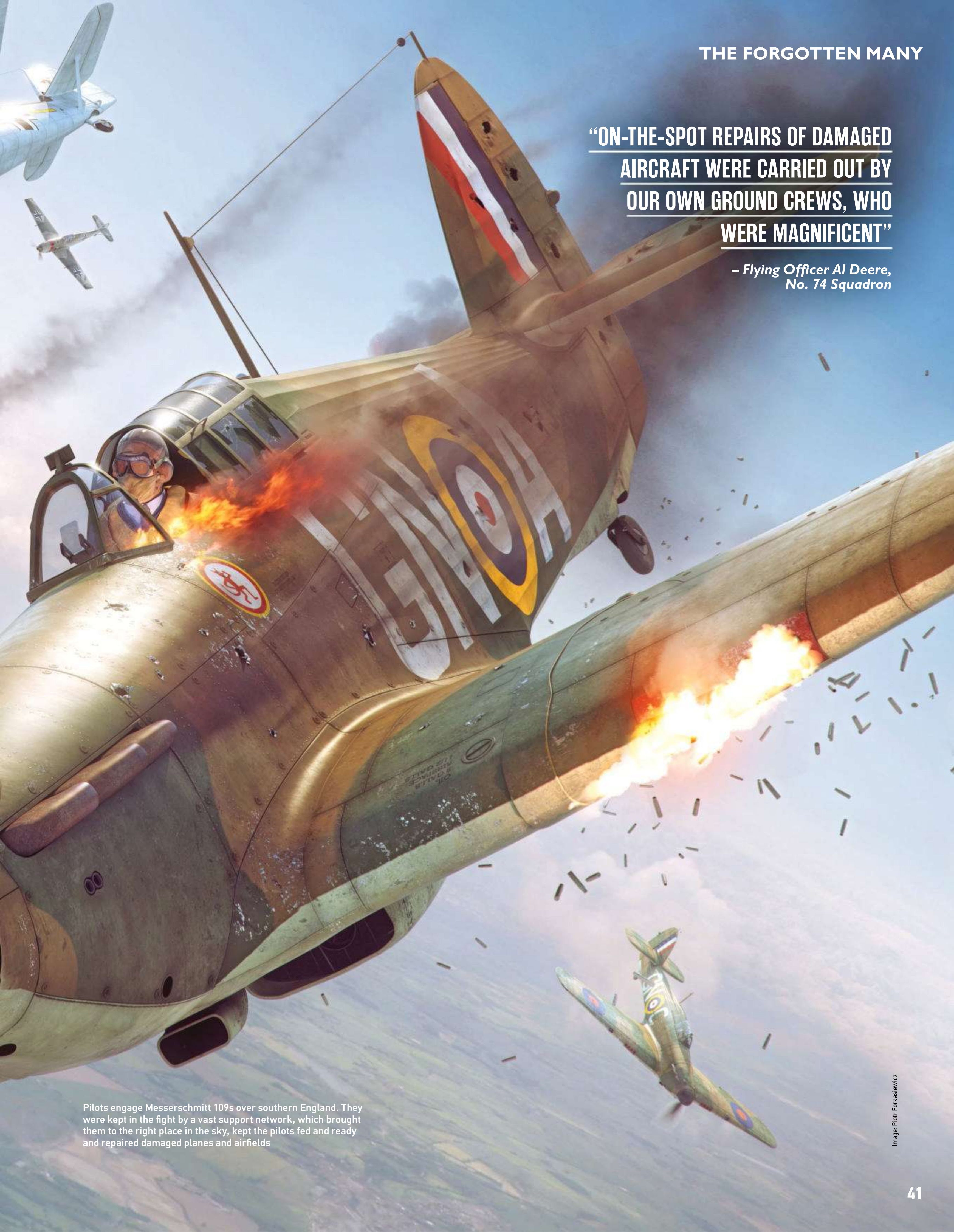
Growing from some 230,000 personnel in June 1940 to over 350,000 by the end of the Battle of Britain, these men and women are the 'Forgotten Many'.

FOUNDATIONS OF AN AIR FORCE

Through the 1920s the RAF was struggling to survive in an age of stringent financial restrictions. Despite the many calls on the RAF and Air Ministry's purse, the chief of the Air Staff, Sir Hugh Trenchard, resolutely implemented his plans to invest in the future. He established technical schools and apprentice schemes to ensure the long-term flow of adequate numbers of well-trained and educated young

Image source: Alamy

An RAF apprentice works on an aircraft's engine. The highly skilled teams on the ground played a vital role in the Battle of Britain



> "ON-THE-SPOT REPAIRS OF DAMAGED AIRCRAFT WERE CARRIED OUT BY OUR OWN GROUND CREWS, WHO WERE MAGNIFICENT"
>
> *– Flying Officer Al Deere, No. 74 Squadron*

Pilots engage Messerschmitt 109s over southern England. They were kept in the fight by a vast support network, which brought them to the right place in the sky, kept the pilots fed and ready and repaired damaged planes and airfields

Image: Piotr Forkasiewicz

men into his noncommissioned ranks – a novel idea, unheard of in either of the other services. In fact, the apprentice schemes were actually quite revolutionary across the whole of society. Apprentices (or at least their families) usually had to pay their employers, reimbursing them for taking the time and effort to train their students in the mysteries of their trade. However, the members of the Aircraft Apprentices Scheme at No. 1 School of Technical Training, based at RAF Halton, not only received first-class tutoring in a range of engineering and technical trades but they also received pay. Particularly for working class applicants, this made the apprentice scheme a unique opportunity, and competition for the 1,000 or so places each year was intense. It made the scheme expensive, but through it Trenchard was laying solid foundations and ensuring the quality of his rank and file for decades to come.

Apprentices could join between the ages of 15 and 17-and-a-half and trained for three years. In the late 1930s, as the RAF expanded, the apprentice scheme was supplemented by a Boy Entrants scheme, where applicants who did not quite reach apprentice entry-level were entered into a slightly lower-level 12-18 month course.

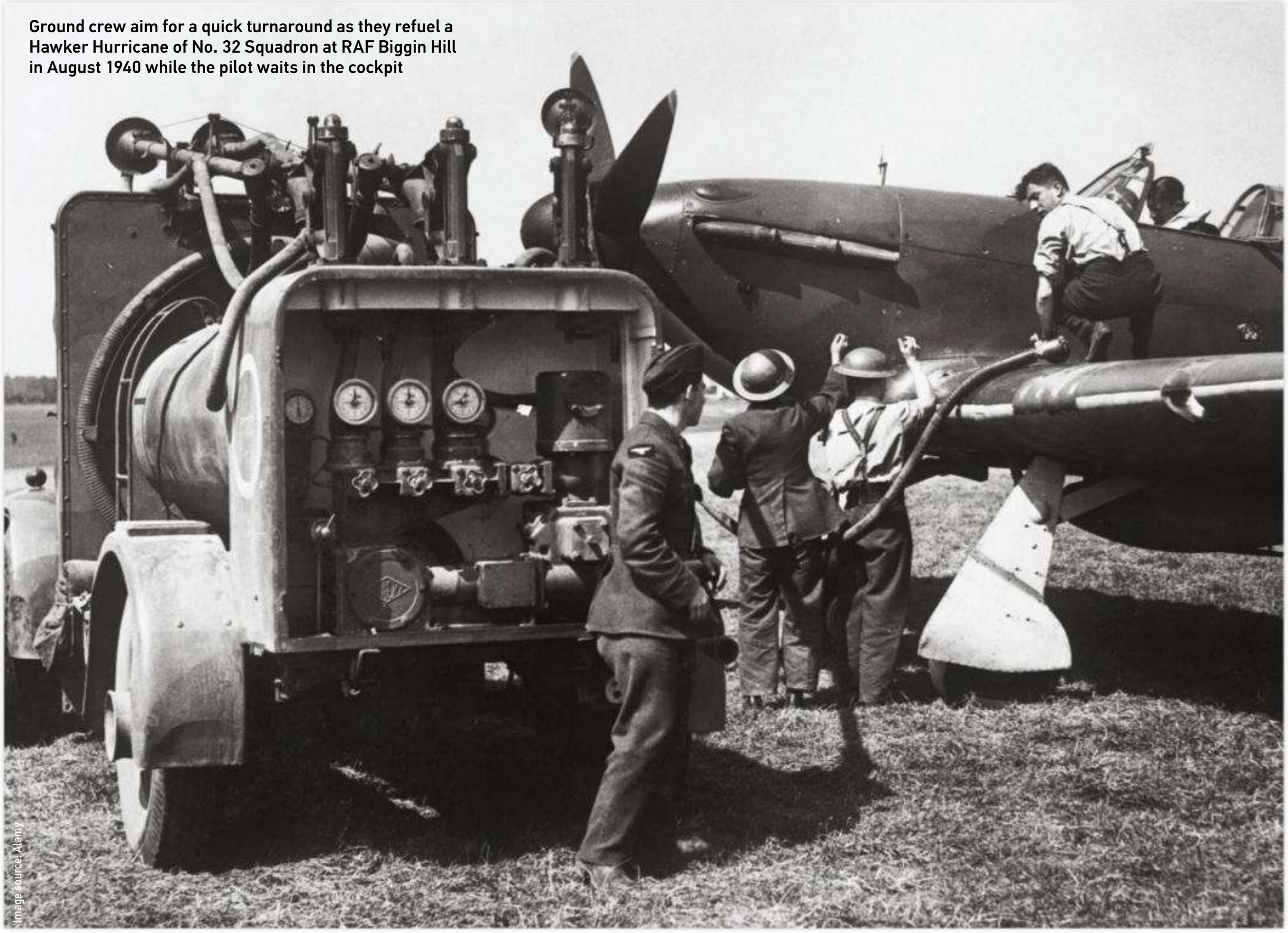
Anyone over the age of 17-and-a-half could join as a man, attending two months of basic training at the RAF Depot at RAF Uxbridge before going for a range of specialist training. No. 3 School of Technical Training at RAF Manston, for example, could turn a man into a blacksmith in a year, a fabric worker in six months, or either a motor transport driver or an aero-engine fitter in four months. At the Electrical and Wireless School at RAF Cranwell, meanwhile, courses ranged between six months and two years on a variety of specialist subjects.

Whether you were a former apprentice (known colloquially as 'Halton Brats') or joined through another route, graduation from these training courses was just the start. Personnel would have to undertake regular further training courses (some as 'placements' with manufacturers), and promotions depended on passing 'Trade Tests' to prove competence in your chosen area. Particularly for Brats, by the time they reached the ranks of noncommissioned officers, the technical levels of education achieved were not far short of the equivalent of university courses.

Officers faced a different course. Some specialisms existed – engineering officers, for

> "THIS ATTRACTED ADVENTUROUS YOUNG MEN WHO WERE CAPTIVATED BY THE EXCITEMENT AND ADVENTURE OF FLYING BUT WHO DID NOT WANT TO COMMIT THEMSELVES TO A FULL CAREER"

Two members of the ground crew chat with Squadron Leader Peter Townsend DSO DFC on their Hawker Hurricane at RAF Wick

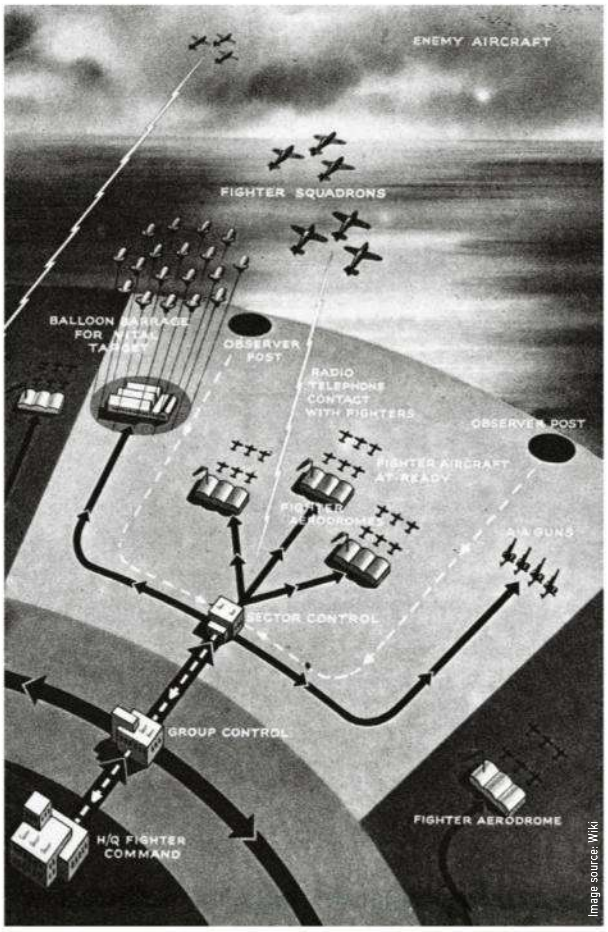


Ground crew aim for a quick turnaround as they refuel a Hawker Hurricane of No. 32 Squadron at RAF Biggin Hill in August 1940 while the pilot waits in the cockpit

Image source: Alamy

Image source: Getty

Image source: Getty



Right: An illustration from a pamphlet produced by the Air Ministry in 1941 showing the air defence network, known as the 'Dowding system'. The significant role of radar was omitted as it was still considered a secret

Image source: Wiki

RAF trainee technical staff going through a small part of their extensive – and never-ending – training

> "IT WAS ALSO A FALLACY ALL ALONG TO THINK THAT THE RAF COULD BE THUS BOMBED INTO SUBMISSION"

example, went through extensive technical training at the Home Aircraft Depot at Henlow. But the vast majority of officers joined as 'general duties', and in the 1930s this required them to qualify as pilots (although of course not all pilots were officers; about a quarter were sergeants). However, officers were always in short supply, so in the mid-1930s the Short Service Commission system was introduced, where men could join for a four-year term, extended to six years in 1939. This attracted adventurous young men who were captivated by the excitement and adventure of flying but who did not want to commit themselves to a full career in the RAF. They would spend about a year in flying training before joining a frontline squadron, where training continued.

By 1939 about four per cent of RAF officers were on these short-term enlistments. The vast majority of pilots on flying squadrons were Short Service Commission men. By 1940 the mobilisation of the Auxiliary Air Force and RAF Volunteer Reserve had further diluted the number of career officers in squadrons. By contrast, the ground crews were overwhelmingly career professionals, with longer service and more advanced training than the crew they supported.

FIGHTING THE BATTLE OF BRITAIN

On 16 July 1940, Adolf Hitler issued Führer Directive No. 16, calling for the destruction of the RAF in preparation for an invasion of Britain. With little progress having been made over the next two weeks, on 1 August he issued Directive No. 17, calling for the Luftwaffe to overwhelm the RAF in the shortest possible time, with an absolute deadline of 15 September. After further preparation, during which small-scale attacks were made on coastal targets, and following delays due to bad weather, 13 August was announced as Aldertag ('Eagle Day') – the first day of Unternehmen Adlerangriff ('Operation Eagle Attack'), the campaign to destroy the RAF.

This first mass assault by the Luftwaffe against the RAF was a failure. Although heavy raids were launched against airfields and radar sites, poor intelligence meant that large parts of the attack were wasted on Coastal and Bomber Command airfields rather than concentrating on the vital fighter airfields. It was also a fallacy all along to think that the RAF could be bombed into submission. Fighter Command's airfields were almost entirely grass fields, and an extraordinary number of bombs needed to be dropped evenly across them to leave no space at all for fighters to land. While airfield buildings could be destroyed, improvisation and an excellent logistics system meant that equipment and material could be quickly replaced, and only once was a Fighter Command station closed for more than a few hours due to enemy action during the battle.

Fighter Command's command and control system was extensive and dispersed over a wide area. Radar stations were hard to destroy due to

WAAFS AT WAR

The Women's Auxiliary Air Force (WAAF) formed in 1939. During the Battle of Britain it proved to be a vital part of the RAF

The Women's Royal Air Force (WRAF) had existed from 1918-1920 before falling foul of defence cuts. In 1939 a new WAAF was formed from RAF companies of the Auxiliary Territorial Service. Although they carried out traditional 'women's' domestic and clerical work, they also staffed operations rooms, radar sites and barrage balloon units. The Battle of Britain showed the WAAF to be a highly valuable resource, and soon women were also engaged in technical and engineering trades (as the WRAF had been), working on aircraft and heavy equipment.

Although Corporal Daphne Pearson had already won the George Cross in May 1940 for rescuing crew members from a burning bomber, the Battle of Britain would give the WAAF a chance to prove their courage under fire en masse. During the Battle of Britain six WAAFs would be awarded Military Medals, three of them at RAF Biggin Hill.

On 18 August 1940, Sergeant Elizabeth Mortimer stayed at her post in the station armoury during an air raid, manning a telephone switchboard that was vital for co-ordinating the defence of the station. Despite being ordered to take cover, she sat through the air raid and then joined teams planting red flags by unexploded bombs so that landing pilots could avoid them.

On 30 August the station was attacked again and two air raid shelters were hit by bombs. In one, 39 ground staff were killed, while in the other one WAAF was killed and many more were buried alive for several hours until rescued.

On 31 August yet another raid hit Biggin Hill and two WAAFs, Sergeant Helen Turner (ex-WRAF) and Corporal Elspeth Henderson, both ignored orders to take shelter and remained at their posts in the operations room. As bombs fell around them they kept the crucial lines of communication open, a heroic act that saved many lives.

"DESPITE BEING ORDERED TO TAKE COVER, SHE SAT THROUGH THE AIR RAID AND THEN JOINED TEAMS PLANTING RED FLAGS NEXT TO UNEXPLODED BOMBS"

Image source: Alamy

WAAFs Joan E. Mortimer, Elspeth C. Henderson and Helen E. Turner, who all received the Military Medal for their actions under fire at RAF Biggin Hill

Some of 'the Few', none of whom would have been able to take off without the efforts of 'the Many'

Image source: Getty

the resilient structure of the radar masts – blast waves mostly went straight through them – and the small size of the huts where the operators and equipment sat. The vital filter rooms and different level operations rooms, which sifted and made sense of incoming information and directed aircraft accordingly, were also small, dispersed and sometimes underground.

Likewise the logistics network that repaired aircraft, replaced expendables (such as fuel, ammunition, oxygen and spare parts) and provided new aircraft was also massive and widely spread out. RAF Maintenance Command consisted of four groups, plus some ancillary units. No. 40 Group had some 23 depots amounting to 790,000 square metres (8.5 million square feet) to contain and issue equipment of all types, from trucks to button sticks. No. 41 Group had 11 storage depots holding and issuing spare aircraft, the flow of which greatly increased as British aircraft production tripled in the first half of 1940.

Supporting them was the Air Transport Auxiliary, a civilian organisation that flew aircraft from factory to depot and then from depot to front-line station. In June 1940 it had about 100 pilots who were in some way ineligible for RAF service; some were foreign, some were over-age, and one-fifth were women. By the end of the battle, its strength had grown to 250 pilots and 350 aircrew and support staff, who freed up RAF pilots to fight.

No. 42 Group was responsible for the storage, movement and issue of munitions, oxygen and fuel, all of which were crucial to keep aircraft flying and fighting. It had 95 fuel depots and five munitions dumps spread around the country, and the handling and transportation of all of these commodities was dangerous and skilled work.

"WRECK RECOVERY HAD TO BE CONTRACTED OUT TO ANY CIVILIAN ORGANISATION WITH SUITABLE VEHICLES, INCLUDING DELIVERY AND REMOVALS FIRMS LIKE PICKFORDS"

No. 43 Group dealt with repair and salvage. Supported by the Civilian Repair Organisation, the 35 units of the group were spread around the country to provide the men and equipment for the repair of aircraft that were too damaged to be patched up by their own ground crews. They also oversaw the collection of wrecked aircraft. Crashed RAF aircraft were of course prioritised – not only would wrecked British aircraft littering the countryside be bad for public morale, but they could also be stripped for parts that could be refurbished and reused. Downed German aircraft would be assessed for intelligence value. During the battle, the demand for salvage crews outstripped the RAF's resources, so much so that wreck recovery had to be contracted out any to civilian organisation with suitable vehicles, including removals firms like Pickfords.

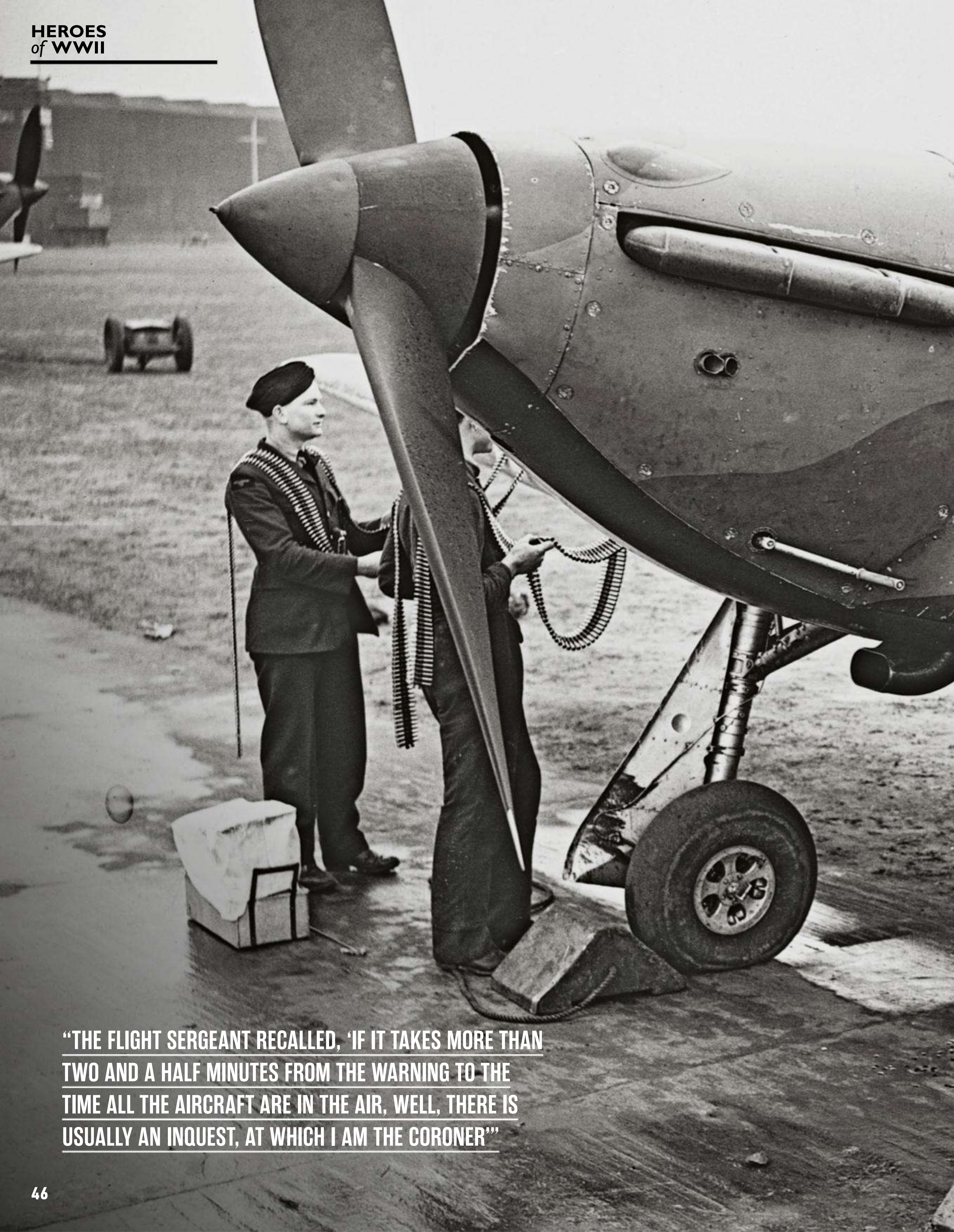
INTO ACTION

In the summer of 1940, the day started well before dawn for fighter station ground staff. They could be hauling themselves out of bed as early as between 3am-4am, dressing and going to the canteen for breakfast. Then they would prepare their station or squadron for action.

The personnel dedicated to caring for aircraft would set about preparing 'their' aircraft. Each fighter had a dedicated two-man ground crew – a rigger and a fitter. A flight sergeant with No. 249 Squadron recalled that, "Each aircraft had its own crew. As a result everybody is very proud of the fighter in his charge. And a healthy rivalry develops, too. They are like the boys in racing stables who groom their own particular horse, call it pet names, slap it affectionately and kiss it when it wins a race... Once a pilot came back from a battle after shooting down a Junkers 88 and two Messerschmitts. The crew that serviced that Hurricane did a war dance and went about swanking to the other crews. They regarded the three at one crack as THEIR work."

Crews would remove canopy and wing covers then start the engine to warm it up before conducting basic checks. Specialists who cared for particular parts of several aircraft – armourers, instrument fitters and wireless mechanics among others – would also do their rounds. Starter motors would be plugged in to make sure the aircraft could be instantly started and running by the time a scrambling pilot arrived. The same flight sergeant recalled, "If it takes more than two-and-a-half minutes from the warning to the time all the aircraft are in the air, well, there is usually an inquest, at which I am the coroner."

After a long, tense wait, their aircraft would hopefully return, when more minutes of frantic activity followed, even if it was not damaged. The anonymous flight sergeant also said, "As soon



“THE FLIGHT SERGEANT RECALLED, ‘IF IT TAKES MORE THAN TWO AND A HALF MINUTES FROM THE WARNING TO THE TIME ALL THE AIRCRAFT ARE IN THE AIR, WELL, THERE IS USUALLY AN INQUEST, AT WHICH I AM THE CORONER’”

Armourers reload a Hawker Hurricane with belts of ammunition. Spitfires could be re-armed with pre-loaded magazines, which was faster, but some had to be fed in from below

Image source: Alamy

CASUALTIES

	COMBAT CASUALTIES	NON-COMBAT CASUALTIES
13 AUGUST 1940 'ADLERTAG'		
Fighter Command aircrew	15	2
Bomber Command aircrew	52	9
Coastal Command aircrew	0	0
Training Command aircrew	0	3
All Commands ground crew	96	3
16 AUGUST 1940		
Fighter Command aircrew	22	2
Bomber Command aircrew	16	0
Coastal Command aircrew	1	0
Training Command aircrew	0	2
All Commands ground crew	43	3
18 AUGUST 1940 'THE HARDEST DAY'		
Fighter Command aircrew	28	2
Bomber Command aircrew	2	7
Coastal Command aircrew	0	0
Training Command aircrew	1	1
All Commands ground crew	37	1

THE BATTL
OF B

Image source: Alamy

as the first one lands it taxis towards the waiting ground crew. A tanker goes alongside to fill up the petrol tanks. At the same time the armourers re-arm the eight Browning guns. The rigger changes the oxygen bottles and fits the starting-motor to the aircraft so that it is ready for the next take-off. Then the rigger takes some strips of fabric which he has brought with him from the crew-room and places them over the gun holes. It helps keep the guns clean and also helps to keep the aircraft 100 per cent efficient in the air until the guns are fired.

"Meanwhile, another member of the crew searches the aircraft for bullet holes, and the electrician goes over the wiring and the wireless mechanic tests the radio set. Every little part of the aircraft is OK before the machine is pronounced serviceable again. All this process should take no more than five minutes, but we allow seven minutes for the whole job... Once we serviced a squadron which came back more or less together in eight and a half minutes.

"If a Hurricane comes down with a few bullet holes, it is my job to see if the injuries are superficial or not. If there are holes through the fabric, we quickly patch them up. If there is a bullet thought the main spar, then it is a new wing."

In between these periods of intense activity, while the pilots waited for the call to scramble, the ground crews would still be busy. They would make grounded aircraft airworthy, do routine maintenance, bomb craters could be filled in, and preparations made for the next scramble. In quiet moments a cup of tea and a sandwich ('char and a wad') might be grabbed from the canteen or a NAAFI van.

While the ground crews worked on the aircraft, the other ground staff at the station would carry on their routine tasks to keep the airfield running. Cooks, cleaners and maintenance staff would go about their daily routines. Clerks would sort, complete and send off the paperwork that would keep crucial supplies and replacement parts flowing in. Days over that summer would be long, exhausting marathons until the Sun slipped beneath the horizon. The flight sergeant recalled, "Finally, at nightfall, we make the daily inspection. The armourers clean the guns, the fitter checks the engine over, the rigger checks round the fuselage and cleans it, and the wireless man checks the radio set. The instruments man checks the instruments. When everything is OK and the necessary papers signed, then the machine can be put to bed. The sleeves are put on the wings, the cover is put over the cockpit, the pickets are pegged into the ground and the machine left, heading into the wind, until dawn... During the summertime our hours are from about 3.30am until 10.30pm."

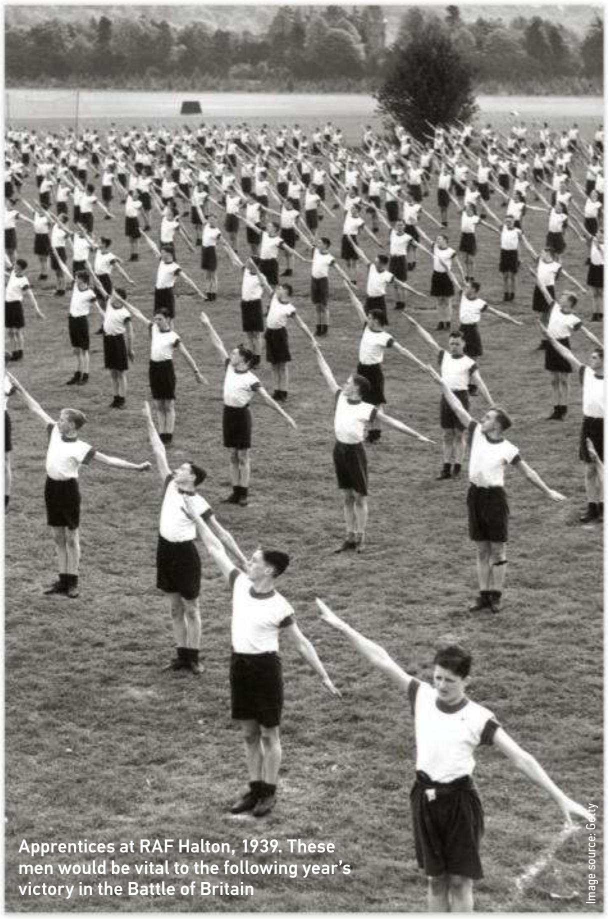
> "THE LOUDSPEAKER... APPEALED, 'TAKE COVER! TAKE COVER!' WITHIN THREE MINUTES OF THAT WARNING I SAW THE FIRST OF THE JUNKERS COMING STRAIGHT DOWN ON THE 'DROME IN A VERTICAL DIVE"

Between 13 August and 6 September 1940, the ground installations of the RAF were the Luftwaffe's main target. During this period, and to a lesser extent even afterwards, the ground crews at sites in southern England often had to work under air attack, and sporadic attacks were made on stations further north too.

On many of these days the ground crews suffered higher casualties than the aircrews, and some stations were badly damaged. On 16 August, RAF Tangmere was targeted. LAC Maurice Haffenden, an engine fitter with No. 43 Squadron, recalled, "At 1pm the loudspeaker, with a greater urgency than before, suddenly appealed, 'Take cover! Take cover!' Within three minutes of that warning I saw the first of the Junkers coming straight down on the 'drome in a vertical dive. The leader was within 2,000 feet (610 metres) of the ground – long wingspan – fixed undercarriage – single engine – and then w-h-e-e-e-z... I went head-first down a manhole as the first bomb landed on the cookhouse. For seven minutes their 1,000-pounders were scoring direct hits and everything was swept away by machine gun bullets. I never believed such desolation and destruction to be possible. Everything is wrecked – the hangars, the stores, the hospital, the armoury, the cookhouses, the canteen – well, everything."

Squadron Leader Sandy Johnstone of No. 602 Squadron, based at nearby RAF Westhampnett, visited Tangmere that evening and "found the place in utter shambles, with wisps of smoke still rising from the shattered buildings. Little knots of people were wandering about with dazed looks on

The magnificent Battle of Britain Memorial on the Embankment in London, which acknowledges the large support network behind the pilots



Apprentices at RAF Halton, 1939. These men would be vital to the following year's victory in the Battle of Britain

Image source: Getty

their faces, obviously deeply affected by the events of the day. I eventually tracked down the station commander standing on the lawn in front of the officer's mess with a parrot sitting on his shoulder. Jack was covered with grime and the wretched bird was screeching its imitation of a Stuka at the height of the attack! The once-immaculate grass was littered with personal belongings which had been blasted from the wing which had received a direct hit. Shirts, towels, socks and a portable gramophone – a little private world for all to see… Rubble was everywhere and all three hangars had been wrecked."

A total of 19 ground staff were killed at Tangmere, but despite the damage the station remained operational. Only RAF Manston would be closed for any extended period of time, after repeated heavy raids. The story of what has become known as the 'Manston Mutiny' was recounted by Len Deighton in his 1977 book *Fighter*, where it is said members of the ground staff refused to leave shelters and had to be forced out at gunpoint. There is no evidence for this at all. Deighton has always refused to reveal his source, and no other evidence has ever come to light.

'SPIRIT OF DUNKIRK'

In fact, morale held up incredibly well in most areas. It is tempting to look back on 1940's 'Spirit of Dunkirk', or later the 'Blitz Spirit', with scepticism, wondering how much is myth based on propaganda. But there is plenty of evidence of the nation pulling together.

An anonymous WAAF at Rye Radar Station witnessed this stoicism when her site was bombed on 13 August: "The deep, snarling roar of the bombers and the protecting fighters grew closer and closer till the whole hut vibrated with it. The Watch continued steadily giving height and speed and direction of attacking hostile aircraft to Fighter Command without a tremor in their voices. Suddenly the RAF Officer-in-Charge called, "They're diving! Get down!" and only then did those airwomen move, and they moved as if you'd pressed a button! We all fell flat on the floor as the first stick of bombs burst… Everything loose shot off the tables, shutters were blown in, and glass flew in every direction. The floor and hut shuddered, and chairs and tables overturned on to us. Through clouds of dust I saw legs and arms protruding from underneath the debris; to those in reach I gave a friendly pat and an assurance that they were all right and must remain still… At last, after what seemed like hours, we dared to raise our heads… What a scene of wreckage and devastation it was!

> "THE DEEP, SNARLING ROAR OF THE BOMBERS AND THE PROTECTING FIGHTERS GREW CLOSER AND CLOSER TILL THE WHOLE HUT VIBRATED"

"The Station buildings were all wrecked… and there were enormous craters all over the place. But… we were back on the air in 20 minutes."

Sergeant Iain Hutchinson was a pilot with No. 54 Squadron at RAF Hornchurch and witnessed another example of the strong team spirit. "The airfield was under attack and chunks of shrapnel were raining down on the airfield. When I taxied

GROUND STAFF

Not all station personnel worked directly on keeping the aircraft flying, but they all played their part in keeping the fighter pilots fighting

PARACHUTE PACKERS

Male and female packers maintained and carefully packed the parachutes that could save a crew member's life. One slight slip in packing or a missed minor fault could have disastrous results in an emergency.

BATMEN

Batmen looked after the officers in their quarters, waking them and bringing their morning tea, taking care of their laundry and other domestic chores – small matters, but they eased the otherwise stress-filled life of a pilot.

COOKS

Never underestimate the physical and mental boost that comes from a hot meal or cup of tea. For air and ground crews working intense, 18-hour days, a constant stream of sustenance was vital.

FIREMEN

A fireman's job was a dangerous one, whether putting out fires in bombed buildings or trying to rescue crews from crashed and burning aircraft. In either case, unexploded bombs or ammunition could 'cook off' at any second.

WIRELESS & TELEPHONE OPERATORS

Fast and efficient communications were the cornerstone of the RAF's success. Whether directing pilots in the air or calling a depot for crucial parts and materials, they were critical to keeping the system functional.

Image source: Alamy

The interior of a radar station, part of the network spread along Britain's south and east coasts

"THE NOISE FROM THE EXPLOSIONS GOING ON AROUND US WAS TERRIFYING, BUT NOT ONE OF THOSE MAGNIFICENT MEN FALTERED FOR A MOMENT IN THEIR TASKS"

Armourers re-arming a Supermarine Spitfire at RAF Hawkinge, July 1940. Some of the Spitfire's guns had to be loaded from below, an awkward operation

Image source: Getty

towards the dispersal no one was to be seen; they were all in the air-raid shelters taking cover. Before I rolled to a halt and cut the engine, 'B' Flight ground crew, under their flight sergeant, were swarming around my Spitfire; the bowser was racing out to refuel the aircraft, while the armament men, laden with ammunition, were reloading the guns. The noise from the explosions going on around us was terrifying, but not one of those magnificent men faltered for a moment in their tasks. I was frankly relieved to be taking off again."

Of course, there were limits though. Jack Shenfield, a mechanic with the same squadron at RAF Hornchurch, also witnessed a more pragmatic approach in action. "I got into the shelter, we were all packed in there, and the sergeant had closed the door. We had been only in there a minute or so when there was a banging at the door. He opened the door and it was the driver of the bowser; this was the vehicle that carried all the high-octane petrol for the aircraft. He'd parked the thing outside the shelter with all the bombs falling all around. The sergeant said, 'Sod off, and take that bloody thing with you, and park it somewhere else before you blow us all to pieces.' The driver had to go back and park it before they'd let him into the shelter."

The RAF's infrastructure and ground personnel were the main target of the Germans' relentless attacks, although of course raids were made on airfields and radar sites before that and would continue to be made (albeit on a smaller scale) afterwards too.

In fact, in some ways the raids became more dangerous, as large, easily spotted and tracked formations of bombers gave way to individual aircraft or small formations that arrived at low level and high speed. Little or no warning could be made for these raiders, and personnel were regularly caught out in the open without a chance to reach shelter. For example, ATA pilot Lettice Curtis would recall being caught in the open as she walked across Hatfield Airfield, near the de Havilland factory, on 3 October 1940.

"As so often happened, the air raid warning and the bombs came at the same instant and one bomb fell very near indeed to those running from the office to the shelters. Luckily for them it did not explode on impact, otherwise we would almost certainly have lost, amongst others, Pauline Gower, our Commanding Officer, who was nearest to the bomb at the time.

One of the bombs, however, did land on a factory workshop and 21 people were killed and some 70 were injured. The bombs had been dropped from around 100 feet (30 metres) and the pilot had machine-gunned the workers running to the shelters."

That aircraft, a Ju-88a of 1/KG77, dropped four bombs, one of which failed to explode, but the element of surprise allowed it to achieve a disproportionate effect (even if it was almost immediately shot down and the crew captured).

Although the direct attacks on stations decreased, the Battle of Britain would still rage for two more months before the Germans switched to night attacks. Though the danger decreased, the long hours and gruelling pace of work did not.

The outnumbered fighter pilots who would repeatedly take to the skies and defend the nation could do so with the knowledge that they were the sharp point of a vast, well-trained and efficient machine intended to put them in the right place at the right time and with their aircraft in the best possible condition to take the fight to the enemy.

GPO

The General post office was another part in the intricate system

The General Post Office (GPO) owned the telephone lines, exchanges and other equipment that were crucial to binding together the RAF's command and control system, as well as its day-to-day activities. Its staff carried out vital maintenance and repair work, often while the stations and radar sites they were supporting were under attack. Without their efforts, RAF Fighter Command would have lost its key edge: the ability to gather and disseminate information and then direct its aircraft to enemy formations.

Images: Alamy, Getty

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FORGOTTEN HEROES OF THE BATTLE OF BRITAIN

In the summer of 1940 Hitler was on the verge of becoming master of all of Europe. But the Royal Air Force stood between him and total victory

WORDS **NICK SOLDINGER**

On 18 June 1940 Winston Churchill stood up in Parliament. The mood was gloomy. France had just surrendered, most of Europe was now under Nazi control, and Britain faced a rampant Germany alone. "The Battle of France is over," he announced. "The Battle of Britain is about to begin. Hitler knows he must break us in these islands or lose the war. If we can stand up to him, all Europe may be freed. But if we fail, then the whole world will sink into the abyss of a new dark age."

Churchill had been warning of war for years but few had listened. The Nazis had spent much of the 1930s building the modern war machine that had just ravaged most of Europe. By contrast, British rearmament had only begun in earnest just six months before the conflict began. What little preparations had been made, however, would prove to be enough. But only just.

Hitler's planned seaborne invasion of the British Isles, codenamed Operation Sealion, was risky. To succeed, the German Luftwaffe needed to first gain complete air superiority. Although the campaign began on 10 July, the true purpose of it wouldn't become apparent until Hitler's so-called 'Eagle Day' on 13 August. Between those two dates, skirmishes over the Channel, as the Luftwaffe picked off British shipping convoys, disguised the fact that on the mainland two huge air fleets were being assembled at newly captured airfields.

By the time Eagle Day arrived, the Germans had amassed about 3,000 aircraft with the aim of annihilating the RAF and its 660 serviceable fighters. All that now stood between Hitler and his new dark age were the courageous souls who would take on that monstrous armada. Most of them were barely out of their teens, and history would come to remember them as 'the Few'.

Finucane's heroism soon spread beyond RAF ranks. Models of his Spitfire, with its distinctive Irish shamrock nose art, were even sold in toy shops

BRENDAN FINUCANE

Nationality: Irish
Rank: Flying Officer, 65 Squadron

He'd go on to become a poster boy for the RAF, but the career of this legendary fighter pilot almost didn't get off the ground

12 August 1940, the day before Eagle Day, witnessed the first major bombing of an RAF airfield as Luftwaffe units probed inland, testing Fighter Command's resolve before the battle ahead. That day, RAF Manston in Kent was playing host to 65 Squadron, and among its ranks was Brendan Finucane. The son of an IRA man, the enigmatic Finucane would go on to become one of Fighter Command's greatest aces, but the 19-year-old pilot was lucky to survive his brush with the Luftwaffe's opening gambit.

With news that a significant force was headed their way, 65 Squadron's pilots scrambled. Finucane and his pals sprinted to their Spitfires and clambered into their cockpits. As they were preparing for take off, however, dozens of German fighters and bombers appeared overhead. Hangars, workshops and vehicles began exploding all around them. As Finucane raced to get off the ground craters began appearing in the runway before him.

Miraculously, however, he got airborne, as did all but one of his comrades. Within minutes they were hurtling through the skies, chasing the Germans back across the Channel. By the time Finucane landed he'd shot down the first of what would be many enemy aircraft. By the time the swashbuckling Dubliner was killed in action two years later, he'd added a further 27 kills. In those dark days Britain was desperate for heroes, and Finucane's bravery had made him famous. More than 3,000 grateful Britons attended his funeral mass to pay their respects.

After recovering from his wounds, Nicolson returned to active service. In 1945 a plane he was in crashed off the Indian coast. His body was never found

GEOFFREY WELLUM

Nationality: English

Rank: Pilot Officer, 92 Squadron

He was just 18 when the Battle of Britain started and officially the RAF's youngest fighter pilot

Geoffrey Wellum's first sorties as a Spitfire pilot had come in May 1940, covering the evacuation from Dunkirk. He then flew several sorties a day from his base at Biggin Hill, Kent, during the opening part of the Battle of Britain, protecting shipping in the Channel. Nothing, however, could prepare the teenager for what he was to witness on 13 August 1940, when the Luftwaffe sent a flying armada of 1,500 aircraft to destroy RAF bases.

In his 2009 memoir, First Light, Wellum vividly recalls the spectacle he encountered. "Within seconds we're among them," he wrote, "each man for himself, fighting his own private battle. Things move terribly quickly. There seem to be hundreds of aeroplanes with everybody shooting at everybody else. I am taken by surprise by the sheer size of this battle in this tremendous arena. Wherever I look the sky is full of aircraft.

"I clamber for height and I have an uninterrupted view. It's magnificent yet appalling. Junker and Heinkel bombers split up, their formations largely decimated, as they head back towards the coast. A Junkers goes down well and truly on fire.

"Yet another plummets to the ground. Three of the crew bail out and only one chute opens, the other two Roman candle. I can see the man at the end of one quite clearly, arms and legs thrashing as he plunges earthwards.

"A Spitfire spins down and a Hurricane dives away, a long trail of black smoke behind it and, at its base, a bright angry red flame. I am transfixed. I don't see anyone bail out. Yet another aircraft goes down in a steep dive. A large one, looks like a Heinkel. My God he's shifting for a big plane and, oh goodness, streaming out behind is a man on the end of a parachute, caught up round the tail and flailing about like the tail of a kite. He may be a Hun, but I would not wish a death like that on anyone."

JAMES BRINDLEY NICOLSON

Nationality: English

Rank: Flight Lieutenant, 249 Squadron

Fighter Command's sole recipient of the Victoria Cross, not just of the Battle of Britain but of the whole of World War II

Despite the extraordinary heroism of the Few, just one of their rank received Britain's highest military honour, the Victoria Cross. When you're fighting alone high above the clouds, finding witnesses to corroborate individual acts of valour can be tough. In James Nicolson's case, however, his heroics happened low enough to be seen by astonished observers on the ground.

By 16 August the German raids were relentless. British losses were mounting and things were getting desperate. Around noon a wave of German planes descended on Southampton. Hurricanes from 249 Squadron were scrambled to intercept them. Among the pilots was 23-year-old Nicolson. Moments into the fray he was jumped by German fighters. Bullets smashed into his plane, hitting his left eye and foot. The petrol tank was also hit. Fuel poured into the cockpit, where it was ignited by the engine. With his cockpit ablaze, Nicolson slid back to bail out, but at that moment an enemy bomber swung in front of him. Despite his plane fast becoming a fireball, Nicolson climbed back into his seat. With only one good eye, up to his waist in flames and his hands blistering on the controls, he closed in on the German plane. Only when he'd destroyed it did the badly burned Londoner bail out, landing unconscious outside Southampton.

Decorated for heroism, the huge psychological strain of aerial warfare eventually told on Wellum (back row, right). He was withdrawn from combat operations in 1943

Henderson with Air Chief Marshal Dowding. Houses now stand where RAF Biggin Hill once did, and Henderson has a road there named after her

ELSPETH HENDERSON

Nationality: Scottish

Rank: Corporal, Women's Auxiliary Air Force (WAAF)

The wee young woman from Edinburgh who proved she was as brave as any man

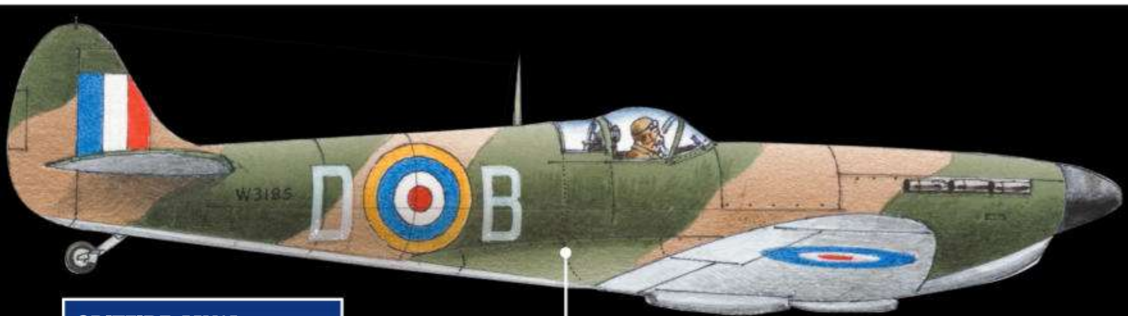
Without women like Elspeth Henderson and the Dowding System that she helped operate, Fighter Command would have soon succumbed to the mighty Luftwaffe. Named after Air Chief Marshal Hugh Dowding, the system was the world's first ground-controlled interception network. It linked observation posts and newly developed radar stations via phone lines to airfields and anti-aircraft batteries. Its ability to forewarn of attacks meant already overstretched squadrons didn't need to constantly patrol the skies but could instead be scrambled in a heartbeat. Its role was to prove pivotal, and people like 27-year-old Henderson soon found themselves on the front line using it.

Towards the end of August, RAF Biggin Hill, where Henderson was stationed, was under daily attack. On 30 August, one raid hit a shelter there killing 39 and entombing many others. Henderson was among the first to start digging them out.

The following day, as she was managing the phones in the operations room, the bombers returned. This time they scored a direct hit on the building that she was in. It was engulfed in flames and the survivors were ordered to evacuate. Henderson, however, remained at her post and continued to pass on vital information. Only when the smoke became overwhelming did she escape via a shattered window.

Just six women in the WAAF won the Military Medal during the course of the war. Henderson was one of them. Her citation noted that she had been awarded it for displaying "courage of an exemplary order."

THE BATTLE OF BRITAIN AT A GLANCE



SPITFIRE MK1A

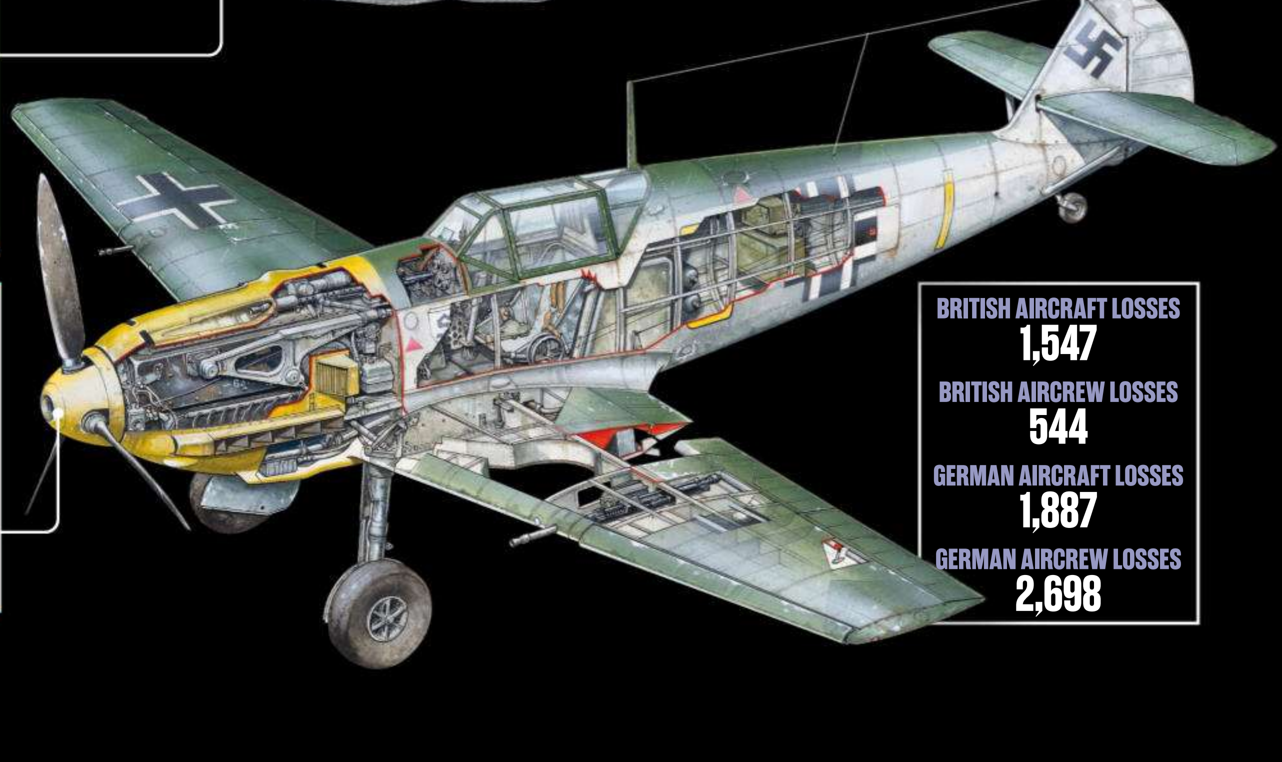
ENGINE ROLLS-ROYCE MERLIN 1800HP V12 MK III

WINGSPAN 11.23M (36FT 10IN)

MAX SPEED 582KMH (362MPH)

ARMAMENT 8 X .303 BROWNING MK II MACHINE GUNS

RANGE 680KM (425MI)



MESSERSCHMITT BF 109E

ENGINE DAIMLER-BENZ 1200HP V12 605D

WINGSPAN 9.91M (33FT)

MAX SPEED 553KMH (343MPH)

ARMAMENT 1 X 30MM MK108 CANNON, 2 X 13MM MG17 MACHINE GUNS

RANGE 660KM (410MI)

BRITISH AIRCRAFT LOSSES
1,547

BRITISH AIRCREW LOSSES
544

GERMAN AIRCRAFT LOSSES
1,887

GERMAN AIRCREW LOSSES
2,698

After the campaign, Sergeant Lacey was promoted to Pilot Officer. He ended the war with a final tally of 28 confirmed kills and four probable kills

Lock shot down 26 enemy aircraft during the campaign

JAMES LACEY

Nationality: English
Rank: Flight Sergeant, 501 Squadron

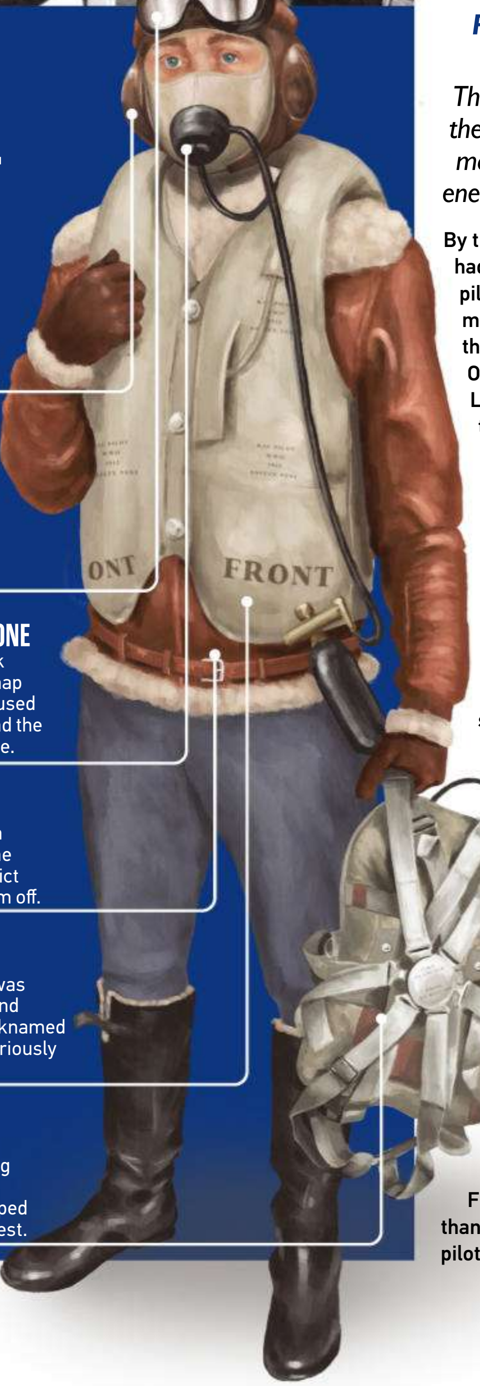
This farm worker's son from Yorkshire took huge risks to bag 18 kills and become the highest-scoring lower-rank pilot of the Battle of Britain

By 30 August, as the campaign neared its height, 23-year-old James Lacey was heading back to the coast after a dogfight that had left his plane riddled with 87 bullet holes. While still over the sea his engine gave out. Lacey had bailed out before, but this time he was determined to get his Hurricane home.

Figuring that he had just enough altitude, he decided that he would attempt to glide back to land – a distance of some 24 kilometres (15 miles). Incredibly, his gamble paid off. Not only did Lacey manage to reach land, but he was even able to put his plane down perfectly on the runway at RAF Gravesend.

"I was lucky," Lacey later recalled. "I was shot down nine times in the 16 weeks the Battle of Britain lasted. I once jumped from a plane that was burning end to end, and once from one that had no tail left. Waiting to go up terrified me. Waiting for that Tannoy to say 'scramble!'. It could make me physically sick. I didn't have butterflies in my stomach back then, I had vultures."

ANATOMY OF A WWII RAF FIGHTER PILOT



© Kevin McGivern

TYPE B FLYING HELMET

Made from leather, lined with chamois and with a layer of cotton padding between, each helmet was customised by the airbase tailor so that the earpieces fitted the wearer.

MK II FLYING GOGGLES

The brass frames were usually blackened and the backs of them trimmed around the edges with faux-fur for extra comfort. The laminated lenses also had a blue-green tint to deal with sunshine.

OXYGEN MASK AND MICROPHONE

The wool and chamois oxygen mask was fitted to the helmet with four snap fasteners. The front of the mask housed both the inlet for the oxygen tube and the attachment point for the microphone.

IRVIN JACKET

With no in-plane heating, sheepskin jackets were worn over the top of the uniforms. As the collars could restrict visibility, some pilots would cut them off.

LIFE VEST

Being shot down over the Channel was a real risk, so pilots wore a cotton and rubber inflatable life vest. Pilots nicknamed it a 'Mae West' in honour of the notoriously buxom Hollywood star of the day.

C-2 PARACHUTE

Pilots would grab their parachutes and strap them on shortly after being scrambled. Shoulder, waist and leg straps met at a single point and clipped into a quick-release clasp on the chest.

ERIC LOCK

Nationality: English
Rank: Pilot Officer, 41 Squadron

The highest-scoring RAF ace of the entire Battle of Britain, lock managed to shoot down three enemy aircraft in one brief sortie

By the start of September, combat had been so intense that many pilots had already notched up more than five kills, giving them the coveted title of 'Fighter Ace'. On 5 September, 21-year-old Eric Lock from Shrewsbury joined them when he added to his tally by shooting down three enemy planes in a matter of minutes.

His combat report reads, "We intercepted a formation of enemy aircraft, attacking the bombers first I engaged a He 111, which I followed down until it crashed. I climbed back up to 8,000 feet, saw another He 111, engaged that and set his starboard engine on fire. I closed in to about 75 yards and fired two long bursts. Smoke came from the fuselage. I was then attacked by a Me 109 who wounded me in the leg. As he banked away, he stall-turned. I fired at him. He exploded in mid-air."

The understated tone of Lock's report belies the true terror of the deadly game of cat and mouse that was being played out in the clouds. By the time his squadron intelligence officer had typed this report up, Fighter Command had lost more than 500 planes, while nearly 250 pilots had lost their lives.

A DAY IN THE LIFE OF A BATTLE OF BRITAIN PILOT

From dawn until dusk every day for 16 weeks, Fighter Command's pilots had to be ready to meet the german threat in the skies

04.00HRS WOKEN AT DAWN

All fighter pilots' days started at dawn with a cup of tea brought to them by a junior rank. They wash and dress before being driven in lorries to the dispersal area. Here, by the runway, they eat breakfast – if they have the time – and wait.

10.00HRS "SCRAMBLE!"

By mid-morning, the radar stations start picking up incoming enemy aircraft. The dispersal area phone rings. The duty officer answers, nods his head, then clicks on the Tannoy and shouts "Scramble!" into the receiver and across the airfield.

10.07HRS INTO THE AIR

Having raced to their planes, clambered into their parachutes and climbed into their aircraft, which fitters will already have started for them, pilots begin to taxi down the runway and take to the air.

10.10HRS MISSION BRIEFING

With the planes now airborne, through their headphones they hear "vector two five zero, bandits 200 plus, angles three zero", which is code for them to steer a course for 250 degrees, where more than 200 enemy aircraft are incoming at 30,000 feet.

10.15HRS BANDITS DEAD AHEAD

Enemy planes are spotted heading in from the east with the Sun behind them. A dogfight begins as planes begin one-on-one duels with the German fighters or go after the slow-moving bombers that are bristling with guns.

10.40HRS THE FIGHT ENDS

German fighters can only fight over English airspace until their fuel starts running out. The RAF pilots then either chase them back over the Channel or pick off any remaining bombers.

11.00HRS RETURN TO BASE

Those pilots that haven't been shot down return to base. Upon landing they are interviewed by an intelligence officer, who compiles a combat report detailing any enemy and RAF planes that have been shot down or damaged.

15.00HRS SECOND DUEL OF THE DAY

Pilots are scrambled again. At the height of the campaign, pilots flew combat missions two or even three times a day.

20.00HRS DISMISSED AT DUSK

As dusk approaches, after 16 long hours of suspense punctured by minutes of extreme violence in the skies, the pilots are stood down. Those who have survived end their day with a pint at the local.

Bader was shot down over France in 1941 and captured. While a POW he tried to escape so often that the Germans ended up confiscating his tin legs

DOUGLAS BADER

Nationality: English
Rank: Squadron Leader, 242 Squadron

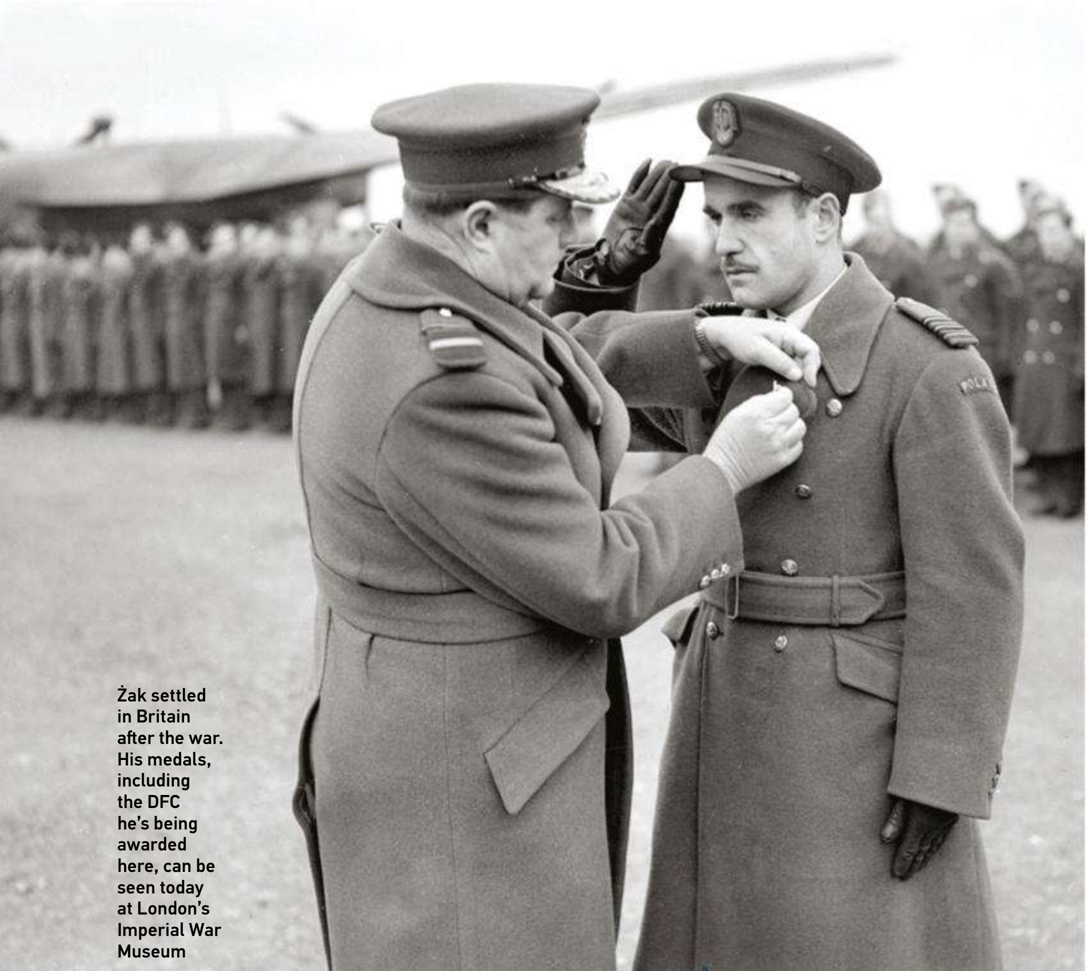
This legendary ace lost both his legs in a pre-war flying accident, but that didn't stop him from helping to turn the battle in Britain's favour

At the age of 30, Douglas Bader was older than most RAF pilots, and his leadership was to prove inspirational to the younger men under him. This was especially true when, on 15 September, the Luftwaffe launched its largest attack against London in the mistaken belief that Fighter Command was so stretched it could destroy its remaining aircraft in one go. The skies were filled that day with 1,500 aircraft and the dogfights lasted until dusk.

With the fighter squadrons attacking in 'big wing' formations of up to 60 planes – a tactic Bader endorsed – the RAF inflicted colossal damage on the Luftwaffe at little cost to themselves. For Bader it would prove a particularly successful day.

Just after noon, his wing ran into a great mass of aircraft, both British and German, outside of London. In fact, the skies were so busy that, according to the report he later gave an intelligence officer, his wing "had to wait until Spitfires and Hurricanes engaging the enemy broke away". Once they had, Bader sent his Spitfire force to attack the German fighters, while he and his Hurricane pilots got stuck into the bombers.

Typically Bader led from the front, most of the time getting the first kill. His report reveals "[Bader] opened fire at 100 yards in a steep dive, and saw large flash behind the starboard motor of the Do 17 as its wing caught fire. He attacked another E/A (enemy aircraft) but it was difficult to get them in his sights as the sky was so full of Hurricanes queuing up to attack E/A. As all the bombers were destroyed S/Ldr Bader's comments are worthy of repetition. 'It was the finest shambles I've been in. For once we had position, height, and numbers'." He was right – 15 September proved to be the tipping point of the entire campaign.



Żak settled in Britain after the war. His medals, including the DFC he's being awarded here, can be seen today at London's Imperial War Museum

WALERIAN ŻAK

Nationality: Polish
Rank: Flying Officer, 303 Squadron

The pilot who was fighting to free his homeland from the only place left that he could still take on the Nazis

The men who flew with the legendary 303 Squadron were largely exiled Poles, men who'd seen first hand what the Nazis did to countries they conquered. Many also had families in occupied territory, and this may partly explain their fearsome reputation and never-say-die attitude. Walerian Żak, who'd go on to lead the squadron, summed up these qualities during fighting over Sussex on the morning of 27 September.

Żak's was one of 11 Hurricane pilots who attacked a bomber formation that was protected by a mass fighter escort. Despite being heavily outnumbered, they shot down 15 aircraft including seven bombers.

But the kills didn't come without cost. Two pilots were killed and Żak's own plane was so badly shot up that it caught fire. As did he. Bailing out was his only option, but fearing his parachute would catch fire too, Żak elected to free fall thousands of feet in the hope it'd extinguish the flames. His gamble worked and, though badly burned, the 29 year old then opened his parachute and landed safely.

ALBERT GERALD LEWIS

Nationality: South African
Rank: Flying Officer, 504 and 249 SquadronS

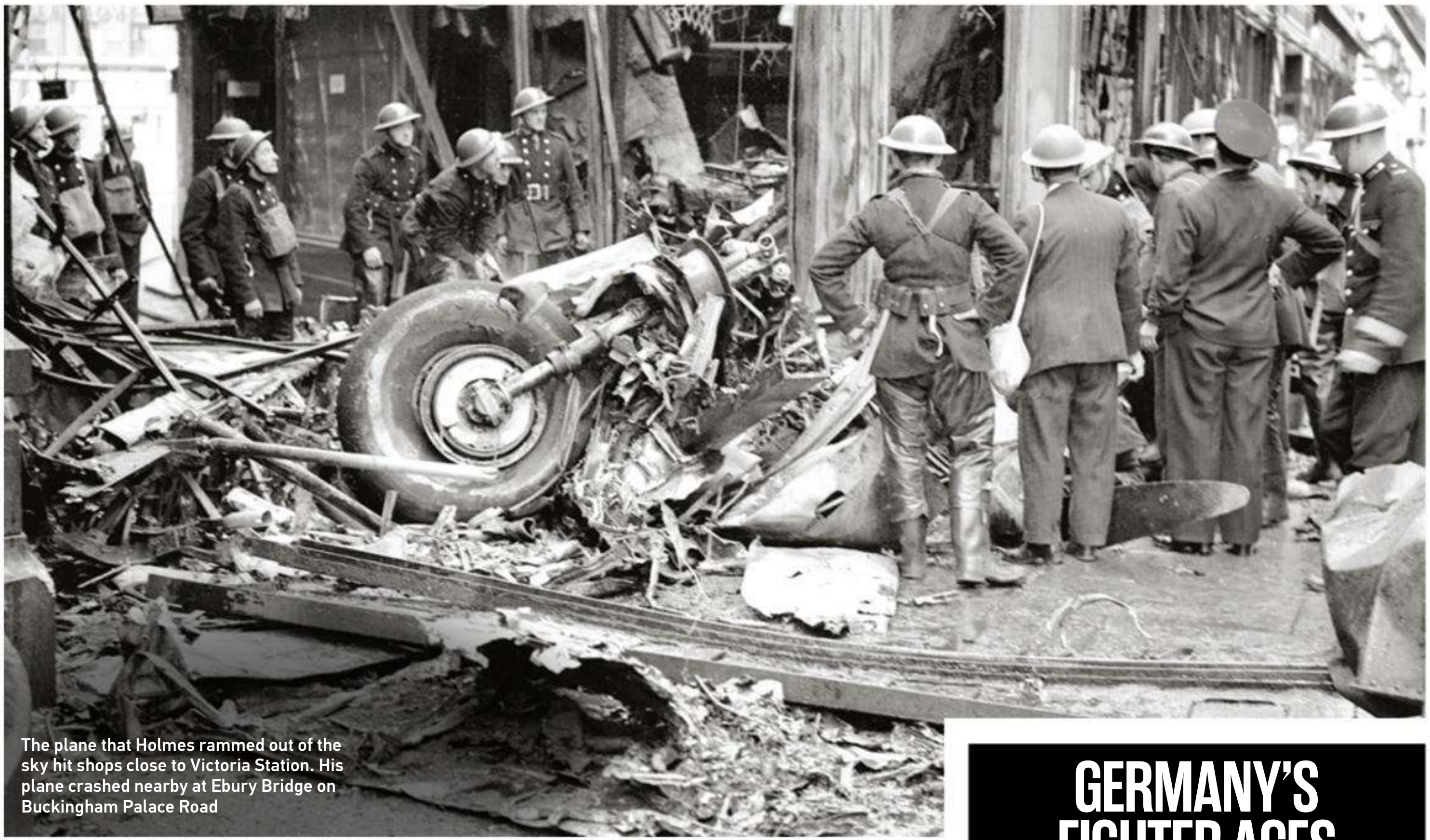
The courageous son of empire who gave nearly everything to defend what he would have called the mother country

As well as Britain and Europe, Fighter Command pilots came from all over the British Empire. One of the finest was South African Albert Lewis, and as the campaign began drawing to a close at the end of September, he experienced the best and worst that life as an RAF fighter ace offered. On 27 September, he shot down an astonishing six aircraft in one day, taking his tally for the war to 18. The very next day, however, he was shot down himself.

While returning from a patrol, the 22 year old was jumped by a pack of German fighters. His plane was hit at 30,000 feet. Shrapnel tore through his legs and his Hurricane caught fire. Flying at 563 kilometres (350 miles) per hour, the blaze soon whipped up into an inferno. "When I pulled back the canopy," he later recalled, "the flames roared up around my face. I pulled the release of my harness and got out. The suddenness with which I parted company with the plane caused me to be shaken around like an old rag."

Lewis landed safely but had suffered severe burns. His eyes were so badly scorched that he was blind for two weeks.

Despite his injuries, Lewis returned to active service within three months of being shot down. He later served in the Far East and survived the war



The plane that Holmes rammed out of the sky hit shops close to Victoria Station. His plane crashed nearby at Ebury Bridge on Buckingham Palace Road

RAY HOLMES

Nationality: English Rank: Flight Sergeant, 504 Squadron

This pilot's heroics saved Buckingham Palace from certain destruction – and he did it without bullets

By 11 October the Battle of Britain was over. While Hitler hadn't officially cancelled the invasion of Britain, he had formally postponed it. It marked a true turning point in the war. It was Nazi Germany's first defeat and proof that the Führer's ideologically driven forces weren't invincible.

What didn't stop, however, was the bombing of Britain, which would only intensify over the next seven months as the Battle of Britain dovetailed into the Blitz.

London had first been bombed on 24 August, accidentally and against the express orders of Hitler himself, as it turned out. But the revenge bombing of the city of Berlin by the RAF the very next day so infuriated him that the focus of the Battle of Britain was switched from destroying Fighter Command and its bases to destroying Britain's infrastructure. It was to prove a costly error. The great raids sent to terrorise London began in earnest on 7 September, and they soon became a regular occurrence.

On Sunday 15 September at 11.30am, a force of 100 bombers and 200 fighters approached London. As they were tracked by the radar station at Uxbridge, where Churchill just happened to be visiting the operations room that day, 250 fighters were despatched to deal with them.

By noon, the surviving bombers arrived over central London. Here, they were engaged by Hurricanes from 504 Squadron. One was being piloted by 24-year-old Ray Holmes, who attacked several bombers before latching onto a badly damaged one heading straight for Buckingham Palace. Holmes wasn't to know, but the plane was actually unmanned. It'd been so badly shot up over south London that its crew had bailed out. Its pilot, Oberleutnant Robert Zehbe, had left the plane on a fixed course before parachuting to what he thought was safety. Coming down near the Oval cricket ground, however, he was attacked by an angry mob and later died of his wounds.

Crewless it may have been, but Zehbe's bomber still had a full payload, enough to obliterate the palace. Holmes closed in behind it, lined it up in his sights, and pressed the Hurricane's trigger. But he was out of ammo. The young Liverpudlian then made a desperate decision. "There was no time to weigh up the situation," he revealed afterwards. "[The German] aeroplane looked so flimsy. I just went on and hit it for six. I thought my plane would cut right through it."

Flying at more than 643 kilometres (400 miles) per hour, Holmes rammed the German bomber's tail. It caused his Hurricane to plunge into a steep nosedive. He was forced to bail out, but the impact snapped the bomber in two and flipped the remaining fuselage over so wildly that the G-force ripped both its wings off. The bomb load fell free, and although part of it hit the palace, most missed, while the plane itself was knocked clear. It ended up crashing by Victoria Station without further loss of life. Holmes' staggering courage had ensured a vital part of Britain's heritage would survive the war.

GERMANY'S FIGHTER ACES

With 111 kills between them, the top three Luftwaffe pilots accounted for seven per cent of all RAF losses

OBERLEUTNANT HELMUT WICK

Battle of Britain kills: 42

Wick was the highest-scoring pilot of the entire Battle of Britain. The 25 year old became only the fourth member of the German armed forces to be awarded the King's Cross of the Iron Cross with Oak Leaf Clusters. He was killed in combat over the Channel in November 1940.

MAJOR ADOLF GALLAND

Battle of Britain kills: 35

Galland would go on to become the youngest general in the German military, attaining the rank of general of the fighter arm in 1941. His total number of kills for the war was 104, despite being banned from combat from December 1941 to the end of 1944 due to his status.

HAUPTMAN WALTER OESAU

Battle of Britain kills: 34

By the time the Battle of Britain started Oesau was already a veteran of the Spanish Civil War, the invasion of Poland and the Battle of France with 14 kills. By the time he was killed in May 1944 by an American pilot, he'd extended that tally to 127.

THE UNSUNG HEROES OF THE BATTLE OF BRITAIN

303 SQUADRON

Among the deadliest but least-celebrated pilots to fight the Luftwaffe during Britain's time of need were Poland's fighter aces. This is the story of their finest hour

WORDS **DAVID SMITH**

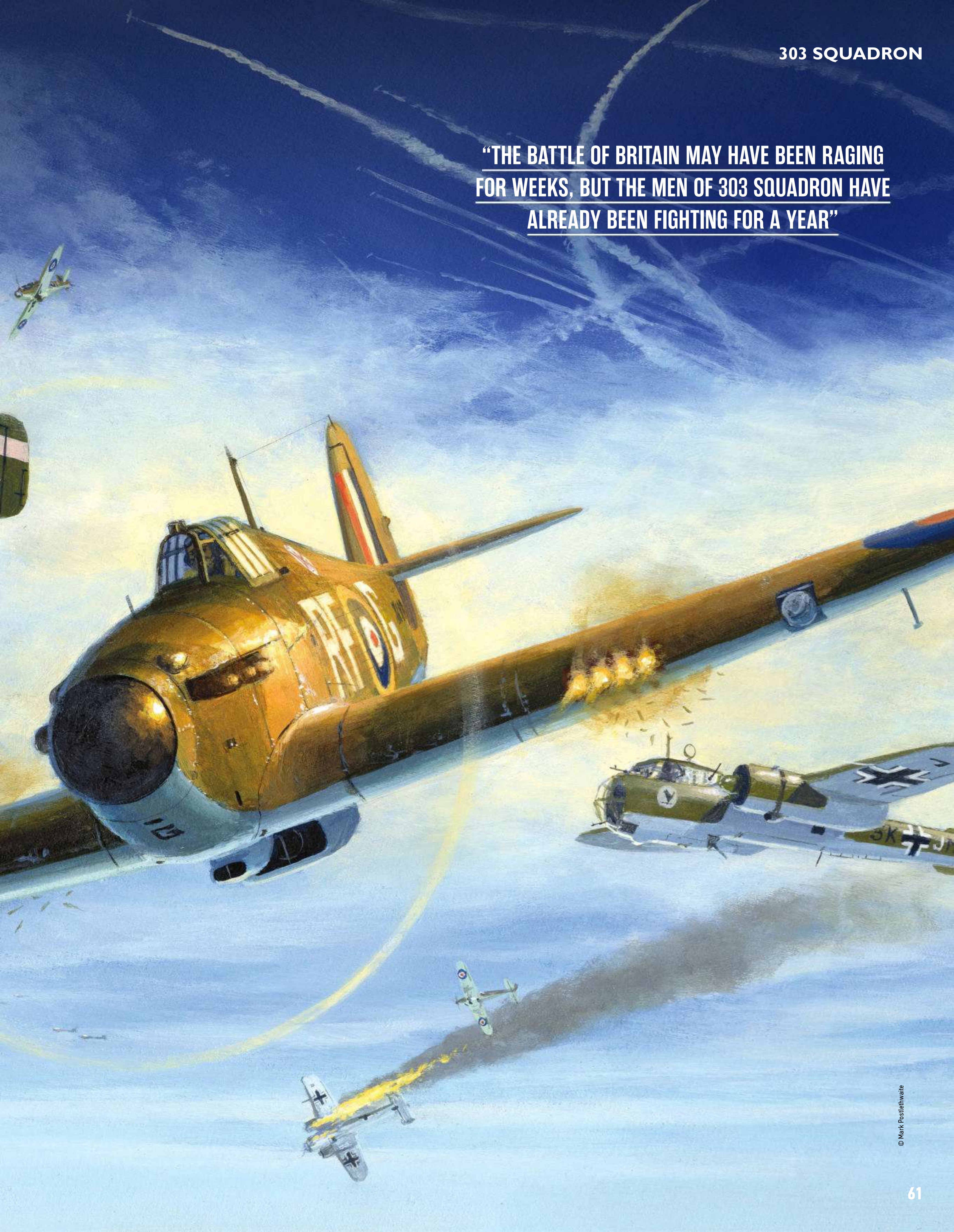
August 1940. For three weeks the men of 303 Squadron have been forced to wait while the German war machine readies itself to smash Western Europe. Not that they have been idle – pilots and ground crew have been training hard to operate their Hurricane Mk Is, and they are nearly ready to renew a fight that, for them, began in their homeland of Poland and continued in France.

Everywhere the Poles have been, the Germans have proved inescapable, forcing them to find a new base from which to continue their struggle. The Battle of Britain may have been raging for weeks, but the men of 303 Squadron have already been fighting for a year.

RISING FROM POLAND'S ASHES

The Polish Air Force (PAF) was reorganised just prior to the outbreak of hostilities in September 1939, with the bulk of the eskadras (escadrilles, or flights, which were grouped together into squadrons) being allocated to Polish land forces. The exception was the Brygada Pościgowa, the 'Pursuit Brigade', which was tasked with defending Warsaw.

Despite the technological inferiority of its machines, the PAF downed more than 100 German planes, and Pilot Officer Stanisław Skalski of 142 Eskadra became the first Allied 'ace' of the war, downing four German planes and sharing in the destruction of a fifth.



“THE BATTLE OF BRITAIN MAY HAVE BEEN RAGING FOR WEEKS, BUT THE MEN OF 303 SQUADRON HAVE ALREADY BEEN FIGHTING FOR A YEAR”

© Mark Postlethwaite

As the Polish armed forces fell back before the German advance, they could count on the forests and marshland in eastern Poland to slow their enemy down on the ground, while new planes (including Hurricanes) were expected to arrive via neutral Romania at any moment to match the Germans in the air. Such hope was dashed on 17 September when the Soviet Union invaded Poland from the east. The next day, the remaining PAF forces were ordered to make their way as best they could to Romania or Hungary. It was to be just the first step of a long journey. From their temporary havens the Polish pilots headed for France, mostly by ship (the few P.11s that had been flown to Romania were left there), and quickly started preparations for the next stage of their war against Germany.

Some Polish forces, perhaps recognising the likelihood of German success in France, headed immediately for Britain. However, most pilots and air crew started frantic retraining on the Morane-Saulnier MS.406 – a plane with a passing resemblance to the Hurricanes the men of 303 Squadron would fly with such distinction during the Battle of Britain.

A total of 130 Polish pilots took part in the Battle of France, with many serving in the 'Montpellier Squadron' (so called because that was where they had undertaken their conversion courses for the MS.406), which was divided between several French formations.

The willingness of the Polish to fight wherever and whenever was exemplified by a squadron that trained in France in order to fight against the Russians in Finland. Before they could be transferred, however, the Finns made their separate peace with the Soviet Union on 12 March 1940. Even after being asked to fly the inferior Caudron-Renault C.714 Cyclone, a seriously underpowered plane with a wooden frame, the Polish pilots stubbornly persevered. French authorities declared the plane unfit for combat after early negative feedback, but with no alternatives available the pilots flew on.

Of course, the end of this chapter came quickly. Having been credited with the destruction of 60 German planes (at a cost of 13 pilots killed), the Polish airmen were on the move once more after France surrendered. Scattering in any planes they could get their hands on or making their way to French ports, the men headed for Marseilles, La Rochelle, North Africa and Gibraltar. Their routes may have been varied, but their destination was always the same – as far as they were concerned, there was simply nowhere else to go.

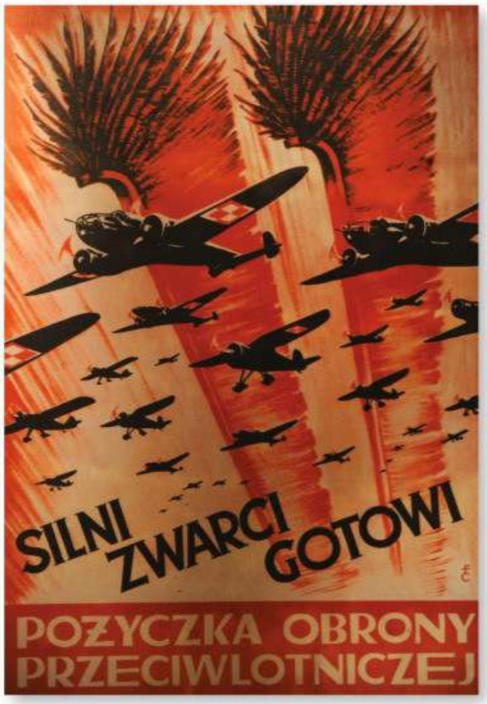
THE ISLAND OF LAST HOPE

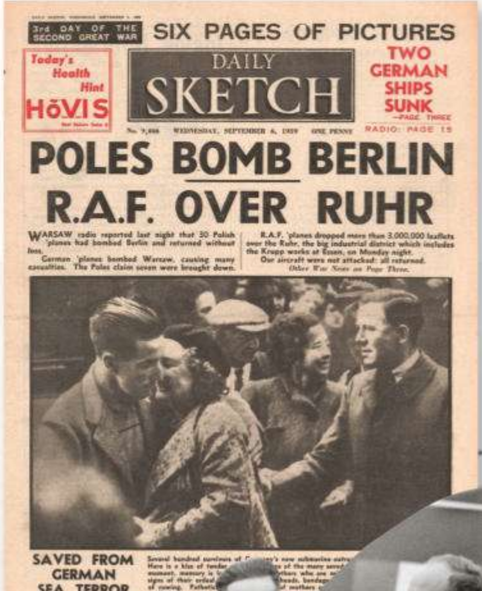
The Polish airmen had put up a brave fight in their homeland and in France, and they could have headed for the US or Canada with their pride intact. But only one nation still offered the prospect of continued combat operations against the Germans.

Despite this, Britain was a very different experience for the Poles. Where they had enjoyed their own 'special relationship' with the French, which meant that most of them spoke excellent French, many of them spoke little or no English. The French method of spreading Polish pilots through existing squadrons would be problematic in the RAF, but that was how the first men to arrive made their contributions.

Some of those who had moved on to Britain soon after reaching France were already in training. Fighter aces were even prepared to take up posts in bomber squadrons, so keen were they to keep fighting. This enthusiasm led to one of the many myths about the Polish Air Force – that their personnel were brave but reckless, and that they paid a heavy price for it.

The Polish fighters were indeed brave, and their preferred tactic – closing to extremely close range




3rd DAY OF THE SECOND GREAT WAR

SIX PAGES OF PICTURES

Today's Health Hint
HöVIS

DAILY SKETCH

TWO GERMAN SHIPS SUNK
—PAGE THREE

WEDNESDAY, SEPTEMBER 6, 1939 ONE PENNY

RADIO: PAGE 15

POLES BOMB BERLIN

R.A.F. OVER RUHR

WARSAW radio reported last night that 30 Polish 'planes had bombed Berlin and returned without loss.

German 'planes bombed Warsaw, causing many casualties. The Poles claim seven were brought down.

R.A.F. 'planes dropped more than 3,000,000 leaflets over the Ruhr, the big industrial district which includes the Krupp works at Essen, on Monday night.

Our aircraft were not attacked: all returned.

Other War News on Page Three.

SAVED FROM GERMAN SEA TERROR

Top: This Polish propaganda poster told the country its air force was 'strong, serried, ready'
Right: A 1939 British tabloid report on the Polish Air Force bombing Berlin

Below: Members of 303 Squadron after returning from a sortie in October 1940

"SOME POLISH FORCES, PERHAPS RECOGNISING THE LIKELIHOOD OF GERMAN SUCCESS IN FRANCE, HEADED IMMEDIATELY FOR BRITAIN" before opening fire on an enemy – appeared to the British to be quixotic.

It would take some time for this misapprehension to be remedied and for the Polish airmen to be recognised for what they were – some of the best pilots available to the RAF. Their experience was valued from the start, but it was with British units that they made their first telling contributions.

Of course, their support was badly needed. Britain, anticipating a major air confrontation with Germany, had been investing heavily in its air force since 1937, but when war came it did not follow the expected pattern. German military planning was not based on massive strikes from the air but on tight co-operation between air and land forces. The nightmare of bombing raids against cities was not part of the plan – it was only to be considered in retaliation for similar raids. Britain's army was small at the outbreak of war and was unable to make a difference on the continent.

The RAF, which had envisioned flying over home ground with the benefit of radar, was much less effective when shorn of these two major advantages. No fewer than 477 fighters and 284 pilots were lost in France. Fighter Command's Sir Hugh Dowding begged the War Cabinet to stop sending his precious planes over the Channel. Spitfires were not committed until the evacuation at Dunkirk, but even so the British lost 155 of their premier aircraft.

However, the war was about to enter a phase that the British had been planning for – a defensive struggle to prevent an invasion. On 18 June, Winston Churchill christened the battle to come when he declared, "The Battle of France is over. I expect the Battle of Britain is about to begin."

Polish fliers were airborne with RAF squadrons as early as July 1940, with the first kill credited to Flying Officer Antoni Ostowicz on 19 July when in action with 145 Squadron. In one of war's many cruel ironies, Ostowicz was also the first Polish pilot to be killed in the Battle of Britain.

Nearly 100 Polish pilots flew with 27 fighter squadrons, moving from one unit to another as needed. They would undoubtedly have been willing to continue in this manner, but it was quickly realised that they could be more effective in dedicated Polish squadrons, where the language barrier and the differences in operational doctrine would not be an issue.

Giving the Poles their own squadrons would also enable them to keep alive the unit histories that meant so much to soldiers, sailors and airmen. It meant that 303 Squadron, the fourth Polish squadron to be formed, was able to resurrect the 'City of Warsaw' name that it had carried when part of the Pursuit Brigade. The squadron's roots, however, ran even deeper than this.

RISE OF THE KOŚCIUSZKO SQUADRON

Following World War I, Poland emerged from more than 100 years of partition to be an independent nation once more. The Polish-Bolshevik War, however, threatened to end

THE PURSUIT BRIGADE

How the Polish Air Force took the first fight to the Luftwaffe in 1939

One of the myths of the war, propagated by the Nazis, was that the Polish Air Force had been destroyed on the ground in the first two days of the German invasion. In fact, the Poles had known what was coming and had moved their fighters to new bases before the Germans struck. The problem was that those fighters were badly outperformed by their German counterparts and even struggled to compete with bombers.

The Pursuit Brigade (Brygada Pościgowa) was comprised of two squadrons tasked with defending Warsaw. Three units, 113, 114 and 123, made up IV/1 Dywizjon (Squadron), based about 11 kilometres (seven miles) north of Warsaw.

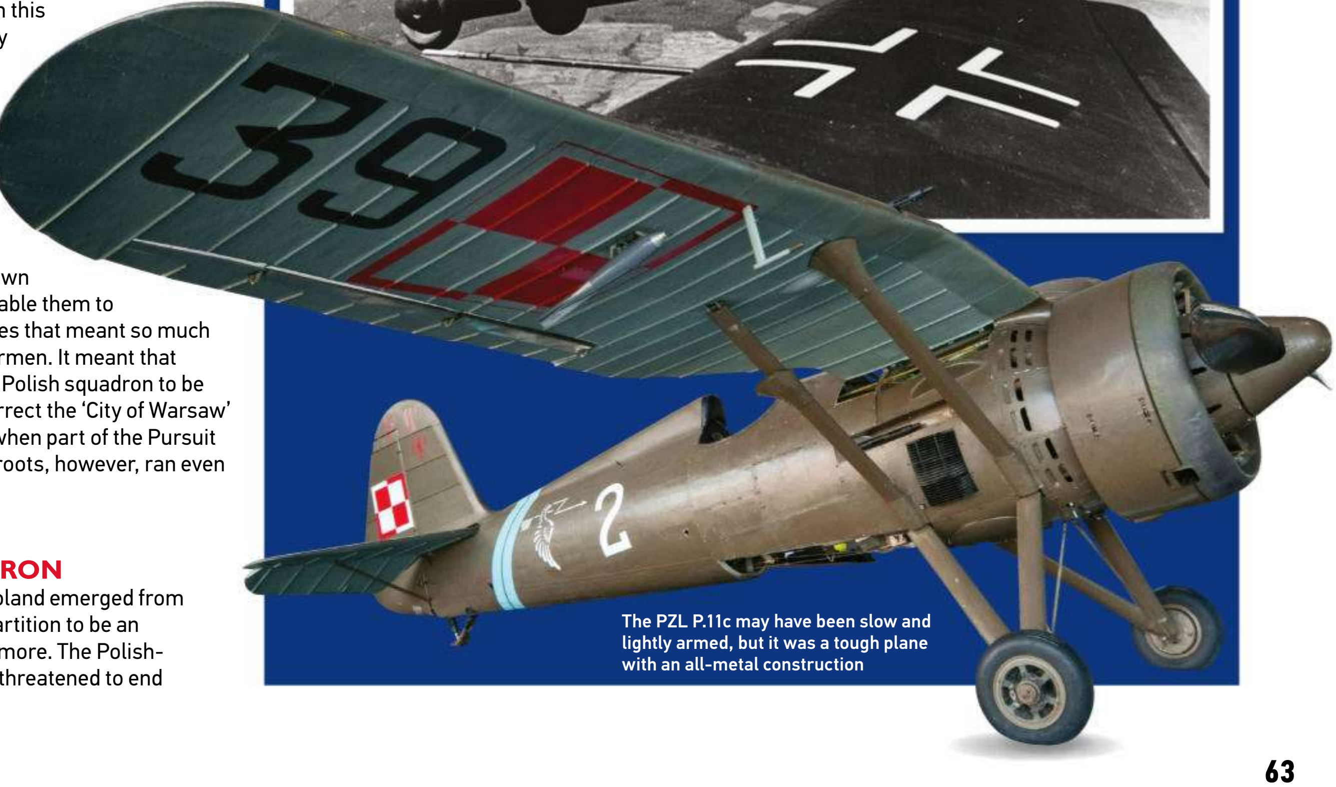
Operating from a base about five kilometres (three miles) northeast of Warsaw, III/1 Dywizjon comprised 111 and 112 eskadras. The famed 303 Squadron would largely be made up of pilots from this unit. Most of the pilots in the Pursuit Brigade flew PZL P.11 fighter aircraft, although 123 Eskadra had to make do with P.7s. Less than a decade old when the war opened, the P.11 had nevertheless been rendered nearly obsolete by modern developments in fighter technology. It had a distinctly old-world look, with its open cockpit and fixed undercarriage.

Unable to catch German planes from behind (its top speed was just 390 kilometres (242 miles) per hour), P.11 pilots were forced to tackle them head-on, and the relative weakness of the P.11 armament (two or four 7.92mm machine guns) meant that they had to close to the sort of ranges that would have made an RAF pilot blanche to have a chance of downing an enemy.

Seriously outnumbered as well, it is no surprise that the PAF lost about 85 per cent of its aircraft during Poland's brief war, but it also claimed more than 100 kills, and the experience gained by the pilots was to prove invaluable in France and Britain.

> "THE P.11 HAD BEEN RENDERED NEARLY OBSOLETE BY MODERN DEVELOPMENTS IN FIGHTER TECHNOLOGY"

A Stuka dive bomber claimed the first kill of the war in Poland, downing a P.11 as it was taking off



The PZL P.11c may have been slow and lightly armed, but it was a tough plane with an all-metal construction

A group of pilots rush to their planes as the order to take off is sounded this almost immediately, with Lenin intent on absorbing the country within the Soviet Union. Help for Poland came from many quarters, but perhaps the most remarkable was the squadron of American volunteer pilots formed by Merian Cooper. Taking their place in the Polish Air Service as the 7th Squadron, they were nicknamed the 'Kościuszko Squadron', after a Polish general who had served with the Americans during the War of Independence (1775–1783). The squadron's badge, designed by American pilot Elliott Chess, combined American and Polish elements such as red and white stripes and 13 blue stars (representing the original 13 American states) into an eye-catching emblem.

Following the distinguished service of the American pilots (three of whom died during the war), the Kościuszko name was taken on by 111 Eskadra, part of the Pursuit Brigade, which in turn provided the basis for 303 Squadron. It was an illustrious history, based on the willingness of foreign pilots to fly in another nation's air force. It is difficult to imagine a more fitting background for the determined men who started training in Britain in August 1940.

The men of 303 Squadron were immortalised in a book by Arkady Fiedler. While many unit histories are written long after the events, with aging veterans recalling their days of service, *303 Squadron* is a very different text. Written during the Battle of Britain, it has an immediacy that instantly grips the reader. Fiedler was an emotive and emotional writer, but even the occasionally overblown rhetoric cannot alter the fact that he offered a fascinating glimpse inside the workings of a fighter squadron under the highest possible stress and inside the workings of the fighter pilot's mind as well.

> "IT WOULD TAKE SOME TIME FOR THIS MISAPPREHENSION TO BE REMEDIED AND FOR THE POLISH AIRMEN TO BE RECOGNISED FOR WHAT THEY WERE – SOME OF THE BEST PILOTS AVAILABLE TO THE RAF"

"The more-sensitive fighter pilots," Fiedler wrote, "clearly feel that their nerve ends reach to the tips of their aircraft's wings. They feel them physically and emotionally. If an enemy damages one of their wings, they feel the shock as if they had been wounded themselves."

Fiedler also debunked another of the myths surrounding the Polish airmen – that they were consumed with rage when in the air. The young Polish pilots were, of course, hugely motivated by experiences in their home country, but in the air they were calm, their minds blank as instinct took over and they experienced "a sort of mental blackout." Only in this state could they hope to react quickly enough to survive – rage would have got them killed.

The men of 303 Squadron did not have to wait for their training to officially end before taking the fight to the Germans. On 31 August, the last day of their conversion course to fly Hurricanes, they were 'vectored' onto a formation of German planes. Bombers and their fighter escort were returning after a raid when 303 Squadron found them. Five kills were made quickly, while a sixth was added by Lieutenant Zdzisław Henneberg after he had patiently followed a group of four retreating planes. Six kills, all Messerschmitt Bf 109s, had announced the arrival of the squadron in no uncertain terms, and their admission to the official strength of the RAF was timely – German strategy had recently shifted to targeting Fighter Command specifically.

THE LUFTWAFFE ATTACKS

Just as the shift to an air-based strategy suited the British, it caused serious problems for the Germans, who were used to combining their air and ground forces – independent air operations presented a new challenge. Famously, the British benefited from radar technology, but a far more prosaic system of ground-based observers was also available to Fighter Command.

German tactics initially involved flights of Bf 110s (twin-engine heavy fighters), which were supposed to lure in British fighter units and leave the way clear for the bombers and their single-seater fighter escorts. However, the 110s suffered so badly they required their own escorts, nullifying their effectiveness. The ultimate symbol of the German way of warfare, the Stuka dive bomber, also proved unsuitable for a role in the Battle of

Hawker Hurricanes fly in formation

Ferić (far left) with other members of 303 Squadron at RAF Northolt

“FOLLOWING THE BATTLE OF BRITAIN, FERIĆ FOUGHT ON IN SPITFIRES, DESTROYING ONE MORE BF 109”

THE ULTIMATE SACRIFICE

Mirosław Feric survived invasion, evacuation and the Battle of Britain before finally laying down his life in an RAF uniform

Born in 1915 near Sarajevo, Ferić moved to Poland in 1919 and fought as part of the Pursuit Brigade during the German invasion of 1939. He shared in two kills but also only narrowly escaped death when forced to take to his parachute after another sortie. He fled to Romania on 17 September and then on to France, where he fought under Zdzisław Krasnodębski, who was also to become his commanding officer in 303 Squadron.

As well as destroying six German planes during the Battle of Britain he also somehow found time to set up a squadron diary, the *303 Squadron Chronicle*, which has proved invaluable for students of the unit.

Following the Battle of Britain, Ferić fought on in Spitfires, destroying a Bf 109 and damaging another before he was killed in an accident on 14 February 1942. Awarded the Silver Cross of the Virtuti Militari, as well as the Cross of Valour (with two bars) and the British DFC, Ferić is buried in Northwood Cemetery in Middlesex.

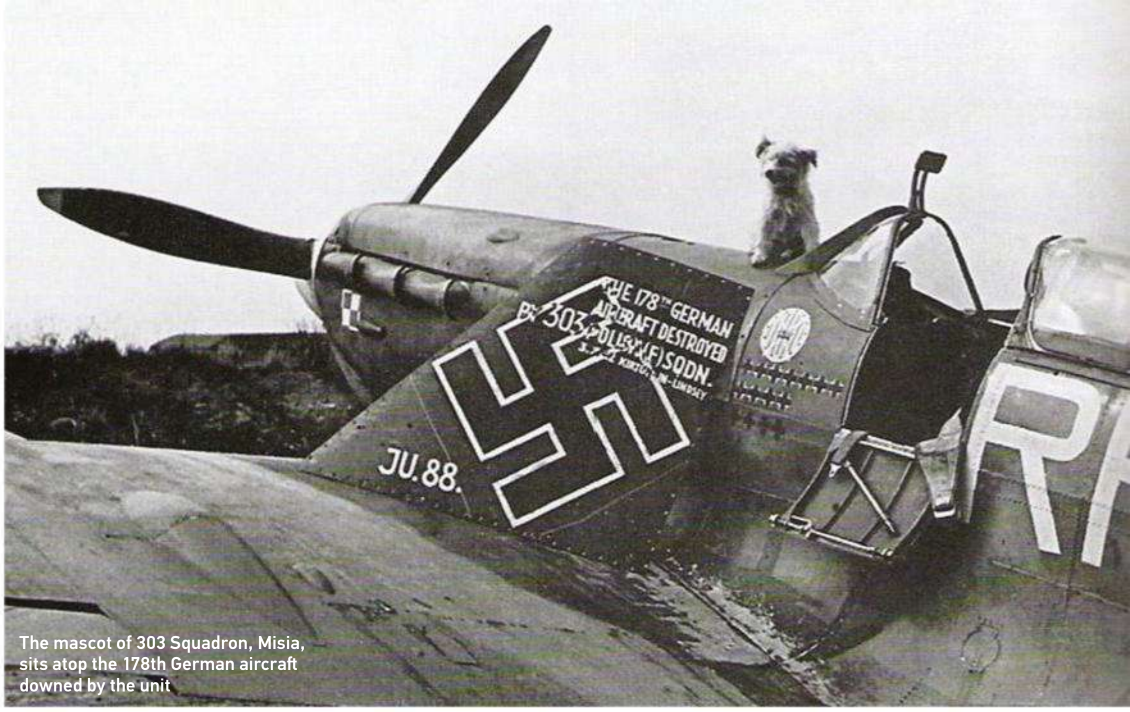
Britain. German bombers, meanwhile, especially the Junkers Ju 88, were good planes, but their payloads were small (the Ju 88 could carry 4,000 pounds of bombs, while the Lancaster would haul up to five times as much on its missions).

German high command appeared unsure over what strategy to pursue, targeting coastal defences, shipping and cities as well as fighter bases, but the overall aim was consistent, at least as far as the Luftwaffe itself was concerned – it was aiming to knock out Fighter Command. German bombers were initially expected to manage with only small escorts as the fighters engaged their RAF counterparts. The RAF, however, prioritised attacks on the bomber formations, forcing the Germans to unite bomber with fighter into the sort of mixed formations that have become symbolic of the battle. The formations presented a big target to the pilots of 303 Squadron when they burst onto the scene on 31 August, and they lost no time in taking full advantage of the situation.

WONDERFUL MADMEN

The successes of 303 Squadron during the Battle of Britain were so remarkable that some began to question the accuracy of their figures. Was it really possible for a group of reckless Poles to be outperforming every other RAF squadron? The group captain at RAF Northolt, Stanley Vincent, wanted to be sure and accompanied the squadron on a sortie flown on 5 September. He could hardly have chosen a better day. The nine Hurricanes that 303 Squadron could put in the air that day accounted for eight German planes to the loss of just one, and all their pilots returned safely. Vincent was amazed and delighted, calling his Poles ‘wonderful madmen’.

The Regia aeronautica, the Italian air force, also took part in the Battle of Britain



The mascot of 303 Squadron, Misia, sits atop the 178th German aircraft downed by the unit

The dash and courage of the Polish squadron could not be denied, but following one of its greatest days it then suffered through one of its most costly on 6 September. One pilot was killed, five Hurricanes destroyed and Major Zdzisław Krasnodębski suffered severe facial burns after his plane was hit. Despite the terrible losses, the day was a triumph for the squadron – a defensive action that saw its nine Hurricanes occupy huge numbers of German fighters and help to break up a major assault.

By stripping a massive bomber formation of its cover, 303 Squadron had allowed other units to get at the bombers themselves. Being a fighter pilot wasn't always about attacking, as Fiedler realised. "A fighter pilot's skill is displayed not only in the offensive, but also in the defensive role," he wrote. "Above all, in the defensive role. While every soldier is easily able to take cover from enemy fire, a fighter pilot at an altitude of 20,000 feet has nothing but empty sky around him. Only lightning manoeuvres and exceptional, superhuman presence of mind can save him."

"SOMETIMES THE MEN OF 303 SQUADRON ATTACKED, SOMETIMES THEY DEFENDED – ALWAYS THEY WERE PUSHED TO THE LIMIT"

The Battle of Britain played out in this fashion. Sometimes the men of 303 Squadron attacked, sometimes they defended – always they were pushed to the limit. The unsung heroes of the squadron, the ground crews (memorably described by Fiedler as the "colourless roots of brilliant flowers") allowed the pilots to be sure of at least one thing as they ran to their Hurricanes: the planes would not let them down. Despite the almost constant action, the ground crews of 303 Squadron failed to put 12 planes into the air on just four occasions. It wasn't always the same 12 planes. It wasn't always the same 12 pilots. The battle took a terrible toll on both groups, but the squadron was handing out more punishment than it was taking.

12 Dorniers were shot down on 7 September for the loss of two Hurricanes, with other British squadrons accounting for 61 planes and anti-aircraft fire destroying another 28.

Then came a dizzying 15 minutes on 11 September, a quarter of an hour in which the squadron scored 17 kills when engaging an airborne armada of 60 bombers, 40 Bf 110s and 50 Bf 109s. The first section of 303 Squadron (three planes) bypassed the fighters and headed straight for the bomber formation. The second section held the German fighters at bay, allowing the third to also target the bombers. Finally, the fourth section joined in the holding action against the fighters.

It was arguably the squadron's finest hour, but it came at a cost. Ground crews at Biggin Hill watched in appalled fascination as Sergeant Stefan Wójtowicz fought alone against nine Bf 109s, shooting two down before his plane was hit. Also dying that day was Arsen Cebrzyński, killed by machine-gun fire from a German bomber. RAF losses on the day totalled 24 planes and 17 pilots as well as the two fatalities in 303 Squadron.

By 15 September, the day that is now commemorated as Battle of Britain Day, the toll on 303 Squadron had become almost too much to bear. Three sorties were flown, but the grinding reality of the near-ceaseless combat was made clear by the number of planes that took part in each: 12 Hurricanes took to the air in the first sortie, nine in the second and just four in the third. Despite this, the Polish ground crews had 12 Hurricanes ready for action by dawn the following day. The 'wonderful madmen' had a supporting cast every bit as important as they were.

'I HAVE FOUGHT A GOOD FIGHT'

The pilots of 303 Squadron were not exclusively Polish. Two Brits, one Canadian and one Slovakian also flew with the squadron, alongside one of the most intriguing characters of the entire war, the Czech pilot Josef František.

Unable to control his instincts when in the air, František would leave his formation shortly after take off and head for the Channel, where he would wait alone to ambush returning German planes flying back to France after their missions. Perfecting this technique to the level of an art form (the Polish pilots called it the 'František method'), he scored 17 kills in the Battle of Britain to add to ten from the Battle of France, but his mental state gradually unwound due to the intense and unrelenting pressure and he eventually died in

HURRICANE MK I

Living in the shadow of the more illustrious Spitfire, the Hurricane was arguably the backbone of the RAF during the Battle of Britain

The Hurricane comprised 55 per cent of Fighter Command's single-seat fighter force during the Battle of Britain. It was not as fast as the Spitfire (523 kilometres (325 miles) per hour compared to over 563 kilometres (350 miles) per hour), but it made up for this by being a more robust machine. From mid-August, Hurricanes were encouraged to concentrate on attacking German bomber formations, with Spitfires handling the fighter escorts.

It's Achilles' heel, one that cost 303 Squadron's Zdzisław Krasnodębski dearly, was the lack of a self-sealing fuel tank. This defect was gradually rectified as the Battle of Britain progressed, but unmodified Hurricanes were prone to erupting in flames if hit in the fuselage-based tank.

The Hurricane's eight .303 machine guns also struggled against the tough armour of the German fighters, and a mixture of incendiary and armour-piercing shells was used as well in an effort to compensate.

Propeller modifications were also introduced through the battle, adding to the Hurricane's ceiling and boosting general performance.

"IT WAS NOT AS FAST AS THE SPITFIRE, BUT IT MADE UP FOR THIS BY BEING A MORE ROBUST MACHINE"

tragically needless circumstances, crashing his plane while executing a victory roll on 8 October 1940 over Ewell, Surrey.

The squadron remains most famous, however, for its 37 Polish pilots, nine of whom died in the six weeks the squadron was operational. During those six weeks they shot down 126 German planes, the highest total of any squadron in the RAF. No less an authority than Dowding at Fighter Command recognised the tremendous contribution made by the foreign pilots when he said, "Had it not been for the magnificent material contributed by the Polish squadrons and their unsurpassed gallantry, I hesitate to say that the outcome of the battle would have been the same."

The Polish pilots had at times appeared to be almost unstoppable. Sergeant Antoni Głowacki, of 501 Squadron, downed five German planes on 28 August, becoming an 'ace in a day', while 303 Squadron's Witold Urbanowicz was known as the 'ace of aces', once shooting down nine German planes in three days of action. He finished with 15 victories to become the most successful Polish pilot of the Battle of Britain.

Although the battle was not to officially end until 30 October, 303 Squadron's contribution came to a conclusion on the 11th of that month when the exhausted men were moved to RAF Leconfield in East Yorkshire for some badly needed respite. But the squadron's war was far from over. It would return to action in 1941, this time with its pilots in the cockpits of Spitfires.

The memorial to the Polish airmen who fought during World War II was unveiled at RAF Northolt in 1948, carrying the names of the 2,408 men who gave their lives and bearing a simple but poignant inscription: "I have fought a good fight, I have finished my course, I have kept the faith."

MESSERSCHMITT BF 109

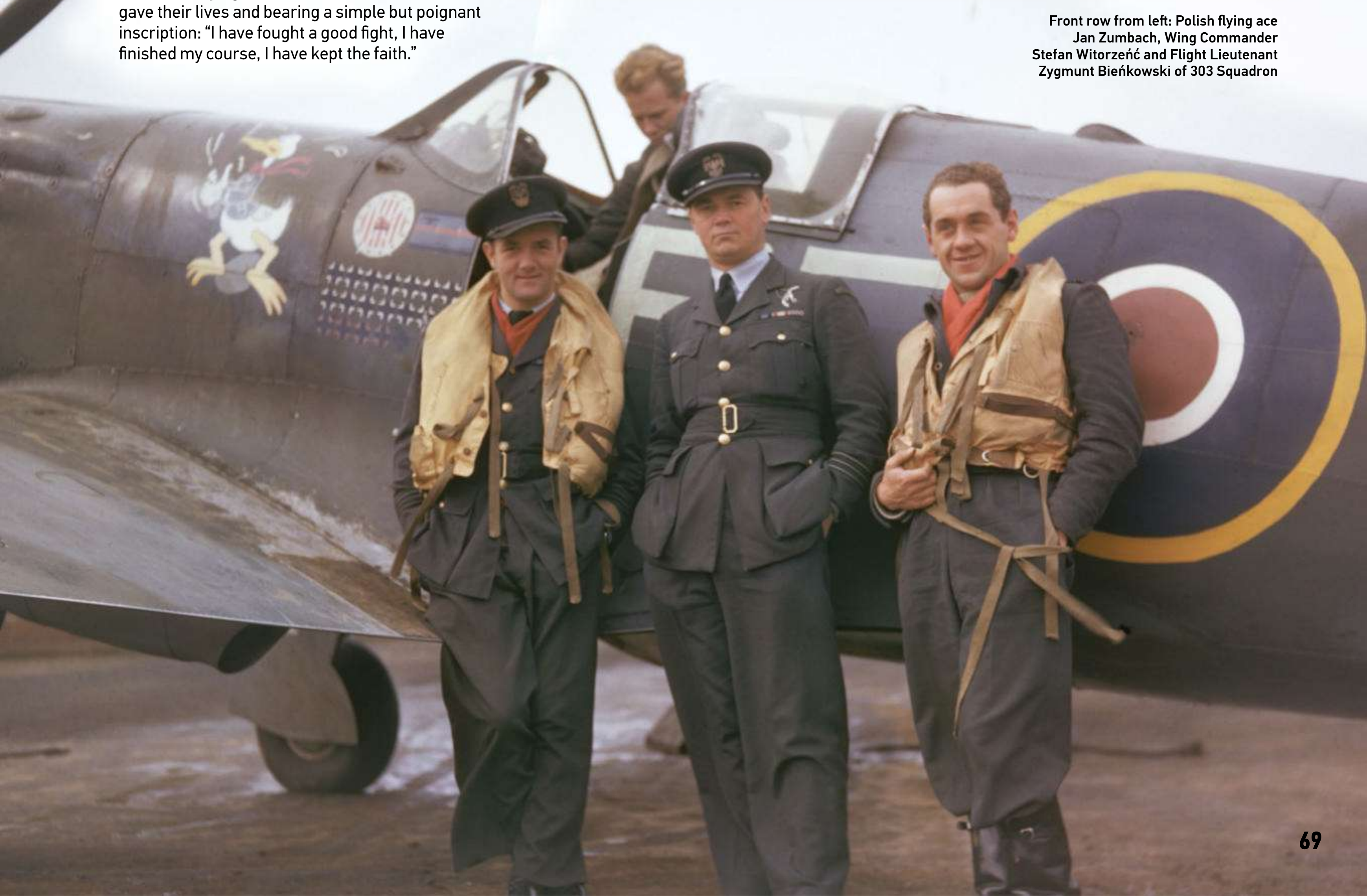
The Germans' premier fighter in the Battle of Britain was a superb all-rounder and a worthy opponent for the Hurricane and Spitfire

The Messerschmitt Bf 109 could make a credible claim to being the best fighter in the skies during the Battle of Britain.

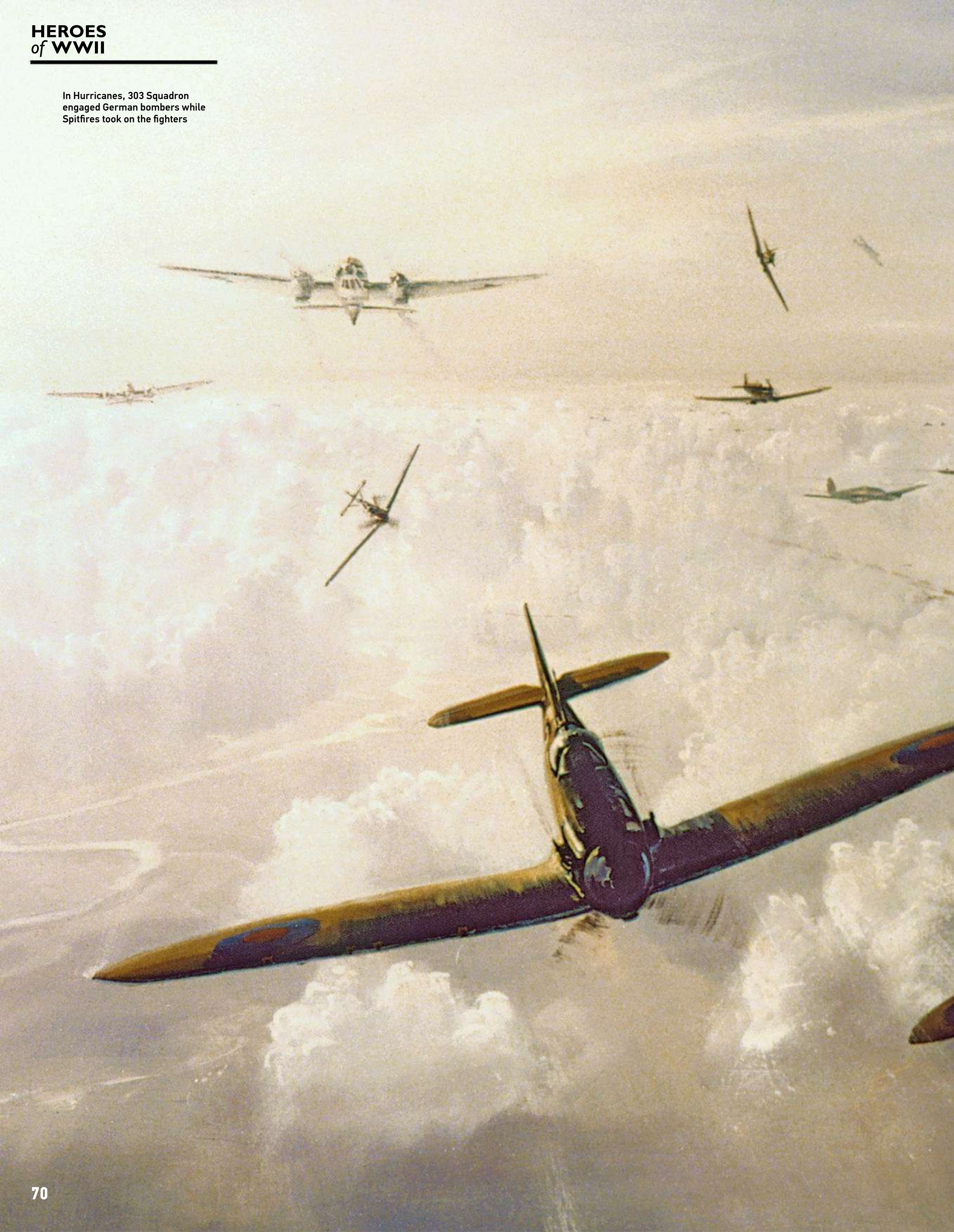
The superior armament of the 109 (a pair of 20mm cannons were teamed with two 7.9mm machine guns) gave them a hefty punch, while they enjoyed significant performance advantages over both Hurricanes and Spitfires at higher altitudes. Richard Overy has claimed that "if the Battle of Britain had been fought at 30,000 feet, the RAF would have lost it".

The 109 also benefitted from extensive armour, added prior to the Battle of Britain, which protected the pilot, but it could not turn as tightly as the British fighters and the Germans also suffered badly in the logistical department; damaged planes often had to be returned to Germany for repair and aircraft production never hit targets. Only 775 109s were produced during the critical four-month period from June to September 1940.

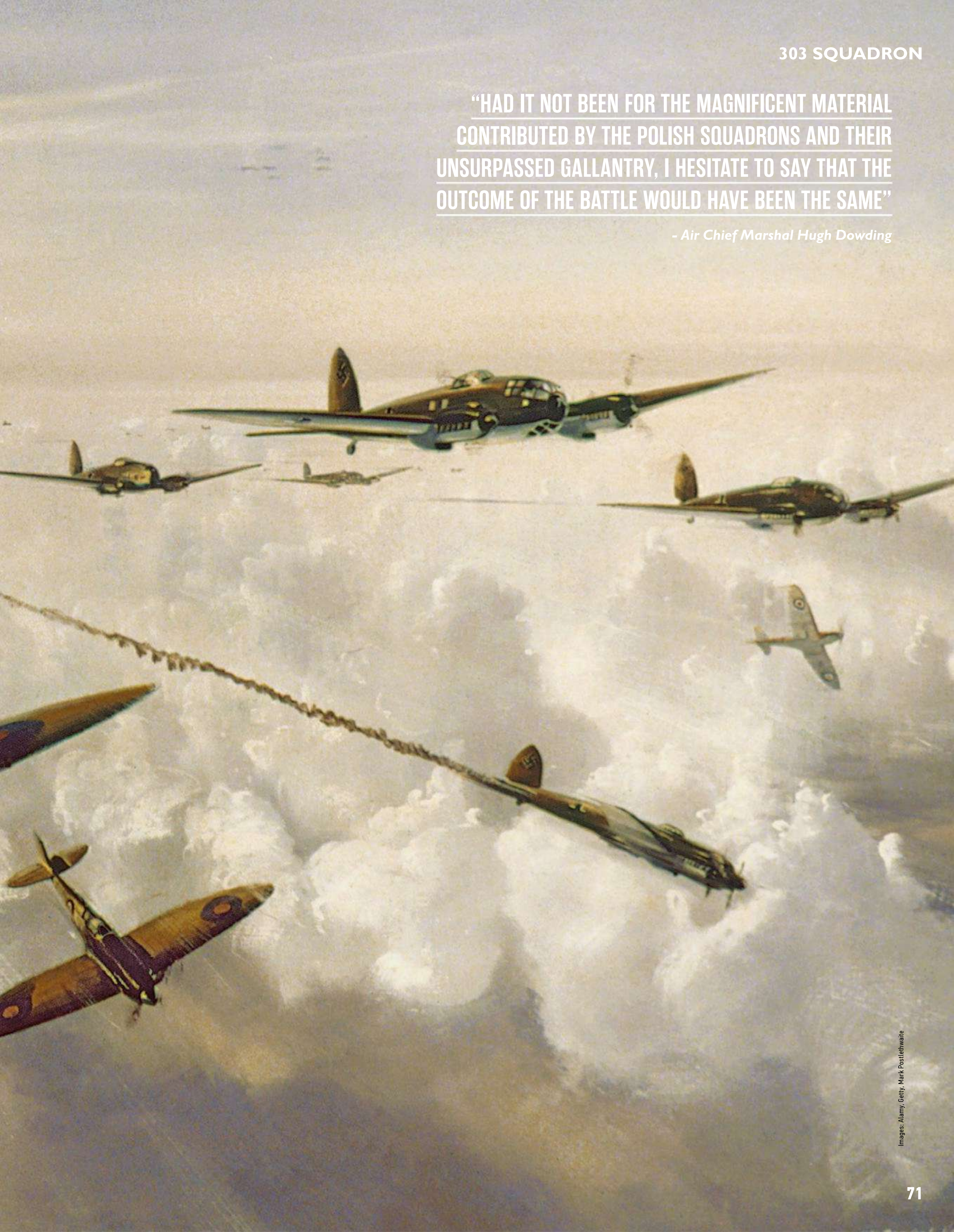
> "THE MESSERSCHMITT BF 109 COULD MAKE A CREDIBLE CLAIM TO BEING THE BEST FIGHTER IN THE SKIES DURING THE BATTLE OF BRITAIN"



Front row from left: Polish flying ace Jan Zumbach, Wing Commander Stefan Witorzeńć and Flight Lieutenant Zygmunt Bieńkowski of 303 Squadron



In Hurricanes, 303 Squadron engaged German bombers while Spitfires took on the fighters



“HAD IT NOT BEEN FOR THE MAGNIFICENT MATERIAL CONTRIBUTED BY THE POLISH SQUADRONS AND THEIR UNSURPASSED GALLANTRY, I HESITATE TO SAY THAT THE OUTCOME OF THE BATTLE WOULD HAVE BEEN THE SAME”

- Air Chief Marshal Hugh Dowding

Images: Alamy, Getty, Mark Postlethwaite

THE WOMEN'S AUXILIARY AIR FORCE

The women who risked their lives, protected the nation and blasted social norms

WORDS **FRANCES WHITE**

The Women's Royal Air Force (WRAF) first came into being along with the Royal Air Force (RAF) in April 1918. However, by 1920 it was disbanded along with the other women's services. It was not until June 1939, when World War II seemed inevitable, that the Women's Auxiliary Air Force (WAAF) was formally established by King George VI. The Auxiliary Territorial Service (ATS) had previously existed as the female equivalent of the Territorial Army, but the motive behind the creation of the WAAF was that a separate women's air service was needed. It was not a totally independent service but rather interlinked to the RAF so women could be brought in to replace RAF personnel when required. Recruitment for the WAAF was not just from Britain; many overseas women also joined the organisation, and local recruitment took place in the Middle East from 1942, including recruits from the Egyptian, Palestinian, Greek and Cypriot communities. The roles of women recruited into the WAAF initially consisted of clerks, kitchen orderlies and drivers. This allowed men previously fulfilling these roles to instead be moved to front-line duties. These roles were generally seen as more acceptable for women due to their domestic nature. The ability of women to fulfil more mentally taxing roles was doubted from the start of the WAAF's formation. However, as the war progressed and situations became more dire, the strain the RAF was under led them to place women in roles previously thought unfathomable, including telephony, telegraphy and intercepting codes and ciphers. Women also entered the male- dominated worlds of mechanics and engineering.

A common posting for WAAF members was to work in the radar control systems as reporters and plotters. Several roles, however, were unavailable to women, such as actually serving as a pilot, although women did fly military aircraft in the capacity of the Air Transport Auxiliary (ATA). Over 150 women flew with the ATA during the war, delivering new planes from factories to RAF units and taking planes back for repairs. Because the RAF thought it unacceptable for women pilots to fly military aircraft, all ATA female members were civilians. The Under Secretary of State of Air, Lord Balfour, later commented that "the Air Transport Auxiliary were civilians in uniforms who played a soldier's part in the Battle for Britain".

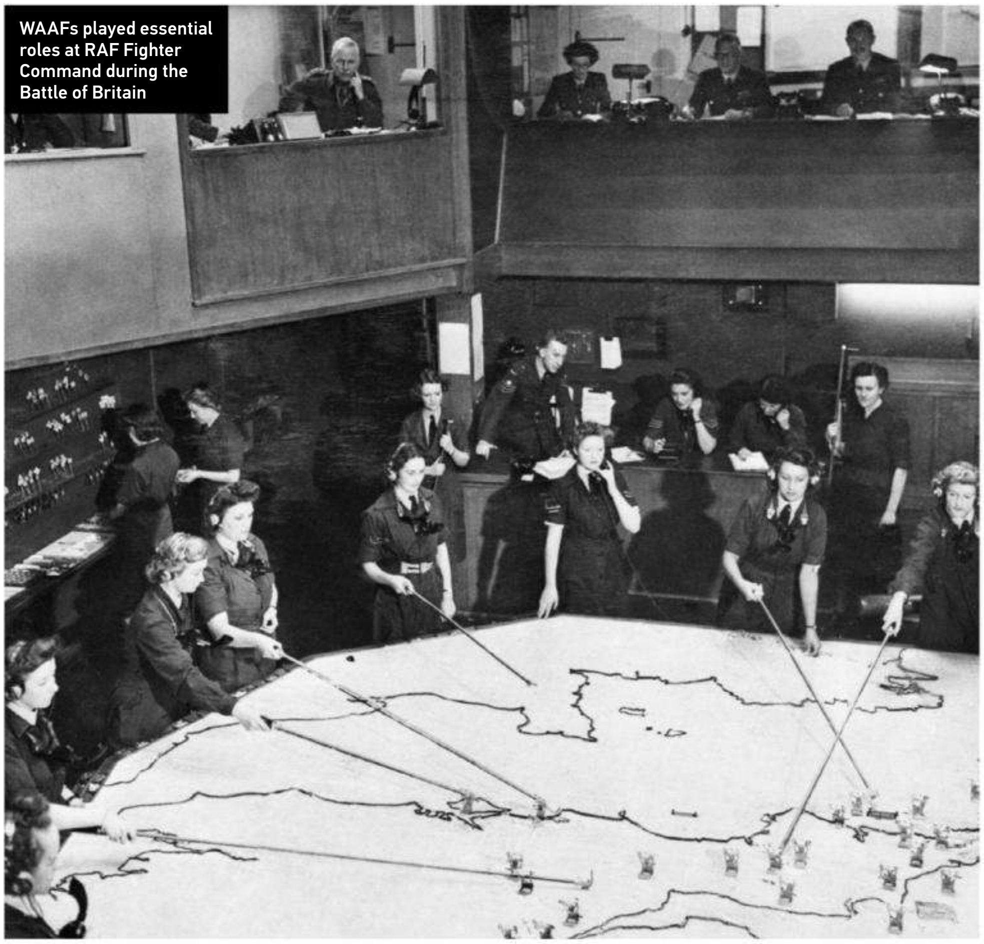
The WAAFs were a vital resource during the Battle of Britain. One role of immense importance was the operation of barrage balloon sites. This required raising and lowering the balloons, which were designed to deter enemy bombers by floating above the potential targets of raids. This would force the German pilots to fly at a higher altitude and impact

Image source: Wiki

The Nursing Orderlies were responsible for evacuating the wounded from France

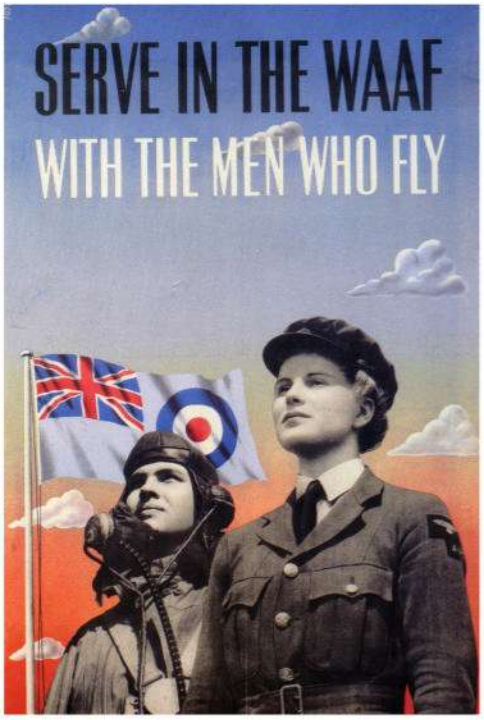
The WAAF's contributions were essential in keeping the RAF flying

Image source: Getty



WAAFs played essential roles at RAF Fighter Command during the Battle of Britain

Image source: Wiki



SERVE IN THE WAAF
WITH THE MEN WHO FLY

Image source: Alamy

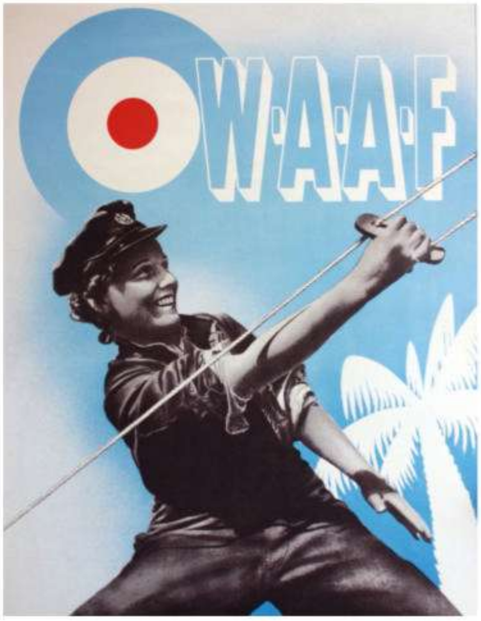


Image source: Getty

Top: By 1945 a quarter of a million women had served in the WAAF in over 110 different roles

Above: At its peak strength, over 2,000 women were enlisting in the WAAF every week

> “THE WORK OF WAAF PLOTTERS WAS OF IMMENSE IMPORTANCE DURING THE BATTLE OF BRITAIN”

the accuracy of their bombing. The balloons also had the additional benefit of bringing the aircraft in range of anti-aircraft guns. Initially, women were believed to not have the physical strength and stamina required to fulfil such a role, due to the 66-foot-long and 30-foot-high balloons. It was also very challenging to keep the balloons not only inflated but in position, particularly during bad weather. However, the initial female volunteers smashed expectations, operating the sites with formidable skill and speed. Eventually over 1,000 barrage balloon sites were operated by women throughout Britain.

The work of WAAF plotters was of immense importance during the Battle of Britain. Based in the sector station operations rooms, the plotters worked in teams of ten, meticulously tracking the direction and size of incoming German raids. Wooden blocks placed around a large table would chart the raids, listing the name and strength of the incoming units, as well as the direction they were coming from, in the form of arrows placed behind each block. They were also colour coded to denote how fresh the information was. This allowed a quick and comprehensive view of the most dangerous and time-critical threats to the nation. The men seated above the plotters would use the information provided by the women to direct squadrons into action and communicate the vital information to other squadrons.

During the summer of 1940 there were thousands of WAAFs placed in Fighter Command airbases across the country to assist in the Dowding System of defence, including bases at Manston, Hawkringe and Biggin Hill. These were especially dangerous places to work, as they were often prime targets for Luftwaffe bombs during the Battle of Britain. One of the worst-affected bases was RAF Biggin Hill in Kent, which saw 39 people killed in one attack on 30 August. WAAF members Sergeant Joan Mortimer, Flight Officer Elspeth Henderson and Sergeant Helen Turner all worked at Biggin Hill as teleprinter operators. On 1 September 1940 the base came under heavy attack from the Luftwaffe while the women were inside the building. Showing immense bravery, Turner continued to work the switchboard even as the building was falling down around her, while Henderson kept in contact with Fighter Command Headquarters in Uxbridge, even after she was knocked to the ground when the operations room took a direct hit. Both women worked tirelessly through the night to keep the station operational. The two WAAFs were so determined to help their country that they only abandoned their posts when a fire broke out and they were ordered to leave.

Meanwhile, Mortimer was in the armoury when the raid began. This was an incredibly dangerous place to be as the room was packed with tons of high explosives. Despite this, she stayed put at the telephone switchboard, ensuring that messages could be relayed to the defence posts near the airfield. When the situation became dire, Mortimer snatched a handful of red flags and hurried outside, marking all the unexploded bombs scattered around the building. Even a bomb exploding nearby didn’t stop her. All three women were awarded military medals in November 1940 for their courage.

An additional branch of the WAAF were the Nursing Orderlies. These women would fly on RAF transport planes, putting themselves in immense danger in order to help evacuate the wounded from the battlefields of Normandy. Nicknamed ‘Flying Nightingales’, this team of nurses would administer oxygen, injections and deal with injuries such as missing limbs, head trauma, broken bones and burns. The Flying Nightingales brought back almost 100,000 wounded soldiers

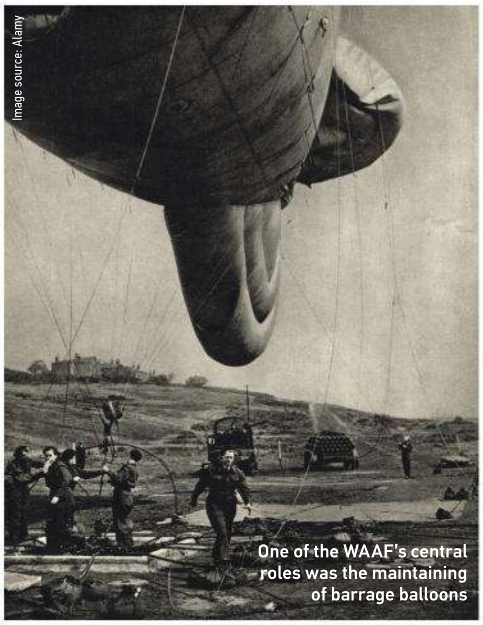


Image source: Alamy

One of the WAAF's central roles was the maintaining of barrage balloons

from Europe to Britain. They also carried vital supplies to the battlefield. An incredibly risky role, the women were given parachutes on the flight out, but on the way back they were ordered to stay with the plane and treat the survivors, and the parachutes were locked away. The planes were so full with casualties that the nurses would have to stand the entire journey back. These women could not be recognised as being RAF nurses, else they would have had held the rank of officer. For all intents and purposes they were volunteers and regarded as civilians in uniforms, with no rank and no medals. For decades, the bravery and sacrifice of these nurses went unacknowledged, however, in October 2008 the Duchess of Cornwall awarded the seven WAAF nurses still living lifetime achievement awards for their service to the nation.

It is nigh on impossible to overestimate how vital the WAAF was to the war effort. At its peak, the WAAF had over 180,000 members and was recruiting 2,000 women per week. At RAF Uxbridge, responsible for commanding all of the aircraft in the southeast, 85 per cent of the staff in the bunker were WAAFs.

Despite their remarkable contribution, WAAFs were only paid two-thirds as much as their male counterparts. Without the bravery and dedication of the WAAF, it is of no doubt that the RAF would have been unable to cover all the necessary roles required, therefore ultimately jeopardising the chances of victory in the Battle of Britain. For women this was a huge achievement, not only in terms of the war effort, but also in regards to their place in society. While previously their capability to contribute had been in doubt, the women's tireless work during the conflict finally proved they were capable of aiding in the British war effort.

Six military medals were awarded to WAAFs for their courage and exceptional service, but for many, the WAAFs' greatest contribution was the support they provided. Members of the WAAF served not only in Britain but also the US, Egypt and across Europe. In 1949 the WAAF was re-formed into the Women's Royal Air Force, and in 1994 it was fully integrated into the RAF. Today, women fulfil all roles within the air force, including, in 2017, the RAF Regiment, with the first joining the specialist corps in January 2020.

BRITAIN'S MUSLIM HEROINE

The British spy who made the ultimate sacrifice to fight tyranny

Image source: Wiki

For her courage in the face of evil Khan was posthumously awarded the George Cross

Born in Moscow on the dawn of the new year in 1914, Noor Inayat Khan was a descendant of Indian Muslim nobility but would go on to make a name for herself through her own bravery.

Khan first lived in England, then moved to France. When the country fell to German troops Khan fled back to England. At heart a pacifist, she was influenced by the teachings of Gandhi. It was this love of peace that motivated her to play a role in defeating the tyranny of the Nazis. This desire for justice led her to join the WAAF in November 1940.

After two years of training Khan was flown to France to become an operator in occupied territory, the first woman sent there for this role. Khan's superiors had their doubts about her suitability, saying that she was unstable and temperamental and "not overburdened with brains", but they did praise her hard work ethic. However, in the field, Khan's experience in playing the harp gave her an edge, working with impressive speed and accuracy.

Khan's job was one of the most dangerous of all – to send and receive messages about sabotage operations and where to send weapons for resistance fighters. The operators were at great risk of detection, a possibility that only became more likely as the war progressed. Khan had to take on a new identity, that of children's nurse 'Jeanne-Marie Renier', but to her colleagues she had the codename 'Madeleine'. Despite multiple members of the network being arrested, Khan remained in the resistance, moving from place to place to avoid capture.

Sadly, this only lasted the summer. In October 1943, Khan was betrayed by one of two French women; either a double agent, or a spurned lover who lost the affections of a man she liked to Khan. Either way, Khan was captured by the Gestapo, who used the operator's secret signals to trick London into sending more agents into their waiting hands. Khan did manage to escape from prison but was arrested within a few hours. By November 1943 she was transferred to Pforzheim prison, where she was classed as highly dangerous and kept in chains.

Despite her horrendous treatment, Khan resisted revealing any information. By September 1944, the Gestapo gave up their interrogations and sent her to Dachau, where she was executed by being shot. Her last word was reported as 'Liberté'.

> "KHAN'S JOB WAS ONE OF THE MOST DANGEROUS OF ALL – TO SEND AND RECEIVE MESSAGES ABOUT SABOTAGE OPERATIONS"

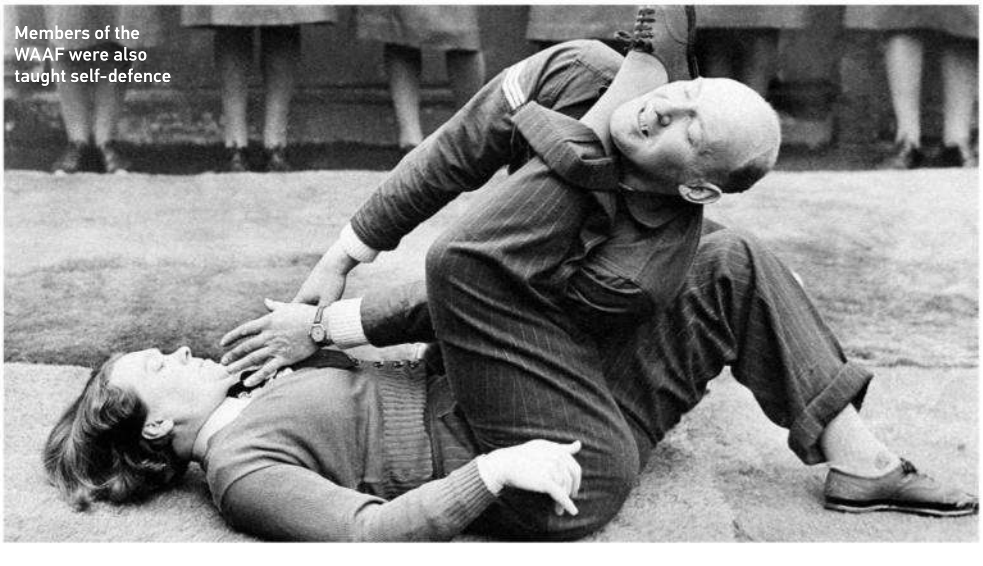

Members of the WAAF were also taught self-defence

Image source: Alamy

THE NIGHT WITCHES

While total war brought women into factories and farms in the US and Britain, in Soviet Russia they took to the skies to defend their motherland

WORDS **JAMES HOARE**

Nadezhda 'Nadia' Popova was just shy of her 20th birthday when her brother was killed, and the Gestapo ejected her family from their home near Donetsk in Ukraine, smashed the windows and chopped down the cherry trees. A member of one of the Soviet Union's numerous flying clubs – aviation was one of the many symbols of modernity and dynamism that gripped the imagination of communist society – since she was 15 years-old (she hadn't told her parents), Nadia had completed her first solo flight and her first parachute jump aged 16. As soon as war was declared she abandoned the dress she was ironing and rushed to the airfield to enlist, but it would only be October 1941 – four months of heartbreak later – that her offer would be accepted.

She would become part of a unit – a squadron leader, no less – that flew up to 30,000 missions and dropped an estimated 23,000 tons of bombs, outfoxed the growling Messerschmitt fighters of the Luftwaffe with the most primitive of planes and struck fear into the hearts of the most feared fighting force of the 20th Century. She lost 30 comrades in action, and would be one of the 23 women of her regiment awarded the nation's highest honour – the gold star and red ribbon of the Hero of the Soviet Union, along with the Order of Lenin and three Orders of the Patriotic War. By 1945, this incredible young woman from the coal fields of eastern Ukraine would write her name in pencil on the wall of Reichstag in Berlin, the red flag of the Union of Soviet Socialist Republics fluttering victoriously through the smoke and booming artillery as Hitler's empire finally died.

Nadezhda Popova was a Night Witch, and institutionalised disdain was as implacable an opponent as the Nazi aggressors she lined up in her sights.

In June 1941 the Wehrmacht ground a murderous trail across the vast unprepared expanse of the Soviet Union; Operation Barbarossa was well underway. Hitler's plan to seize vast swathes of fertile Belorusian farmland, Ukrainian oil fields and Russian industrial centres had taken Soviet despot Joseph Stalin by surprise. Stalin had absolute faith in 1939's Molotov-Ribbentrop Pact which defined the spheres of

influence between the obviously incompatible superpowers. Germany's Nazi regime nursed a pathological hatred of communists, Jews and Eastern Europe's Slavic peoples which they believed to be racially inferior to Germanic 'Aryans', and millions of Slavs were to be murdered or deported to make way for German settlers. More than a war of conquest, this was, in the Fuhrer's own words, a "war of annihilation" that transformed Europe's eastern fringe into a great and terrible charnel house. Steeling the will of his commanders, Hitler reminded them in a secret briefing, "This struggle is one of ideologies and racial differences and will have to be conducted with unprecedented, unmerciful, and unrelenting harshness."

The unprepared Red Army was overrun, and by October 1941 the swastika was flying over Estonia, Lithuania, Latvia, Belarus, and Ukraine.

"Lenin left us a great estate and we made s**t out of it," Stalin reflected later in the war.

Despite the number of women prepared to fight or fly to defend their homeland and avenge their loved ones, and the supposed egalitarianism of communist society, women were refused combat roles. One young woman, eager to serve, recalled a recruiting officer telling her, "Things may be bad but we're not so desperate that we're going to put little girls like you up in the skies. Go home and help your mother."

It would take a personal plea to Stalin from Marina Raskova – "Russia's Amelia Earhart," according to the international press – for the situation to change. Raskova, who was 29 when war broke out, was one of the Soviet Union's most famous aviators. In 1933 she became the first female navigator in the Soviet Air Force, became the first woman to teach at Zhukovsky Air Academy in 1934 – instructing male navigators who were initially sceptical of her abilities – and achieved celebrity status in 1938 when the 26 year-old Raskova, along with two other women, broke the record for a women's straight-line flight, travelling non-stop for over 5,900 kilometers (3660 miles) for Moscow to Komsomolsk in the Soviet Far East – bailing out with her parachute when they couldn't find the landing strip, Raskova spent ten days lost in the dense swampy taiga with no food, survival equipment or water. Unsurprisingly, they were proclaimed Heroes of the Soviet Union on their return and toasted by Stalin who declared that "Today these three women have avenged the heavy centuries of oppression of women."

How could he resist her after that?

"She said to Stalin, 'You know, they are running away to the front all the same,'" recalled one of her future comrades-in-arms, Yevgeniya Zhigulenko after the war. "It will be worse, you understand, if they steal airplanes to go…'"

With Stalin's blessing Raskova formed and trained the 586th Fighter Aviation Regiment, flying Yakovlev Yak-1, Yak-7B and Yak-9 fighters, Raskova's own 125th Guards Bomber Aviation Regiment which flew state-of-the-art Petlyakov Pe-2 dive bombers, much to the envy of male bomber regiments, and arguably the most famous of the lot – the 588th Night Bomber Regiment. Later renamed 46th 'Taman' Guards Night Bomber Aviation Regiment, it would become better known by the name given to it by its German enemies – die Nachthexen, or the Night Witches, as they would idle the engines and drop through the clouds at a glide to bomb German units in near-silence, with only a broomstick-like rustling of the canvas body to give them away. Specialists in precision bombing of supply depots and command centres, and 'harassment bombing', in which the Night Witches' role was to keep the enemy on edge, unable to sleep or rest without fear of death from the skies at any time.

Marina Raskova (first right) and her co-pilots in 1938, right before their record breaking flight to Kosomolsk

Night Witches going over a mission on one of their Polikarpov-Po planes just before takeoff

9
CCCP-C2142
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Polikarpov Po-2 biplanes being flown before the war

Nahdezhda Popova, squadron commander in the 46th Guards Night Bomber Aviation Regiment

"We flew in sequence," recalled Nadezdha Popova in a 2009 interview for PRI's 'The World'. "One after another, and during the night we never let them rest so they called us 'Night Witches.' And the Germans made up stories. They spread the rumour that we had been injected with some unknown chemicals that enabled us to see so clearly at night."

"They would have to run out into the night in their underwear, and they were probably saying, 'Oh, those night witches!'" said Galina Brok-Beltsova, who flew with the Night Witches' sister regiment the 125th, in a 1996 issue of FAA Aviation News. "Or maybe they called us something worse. We, of course, would have preferred to have been called 'night beauties,' but, whichever, we did our job."

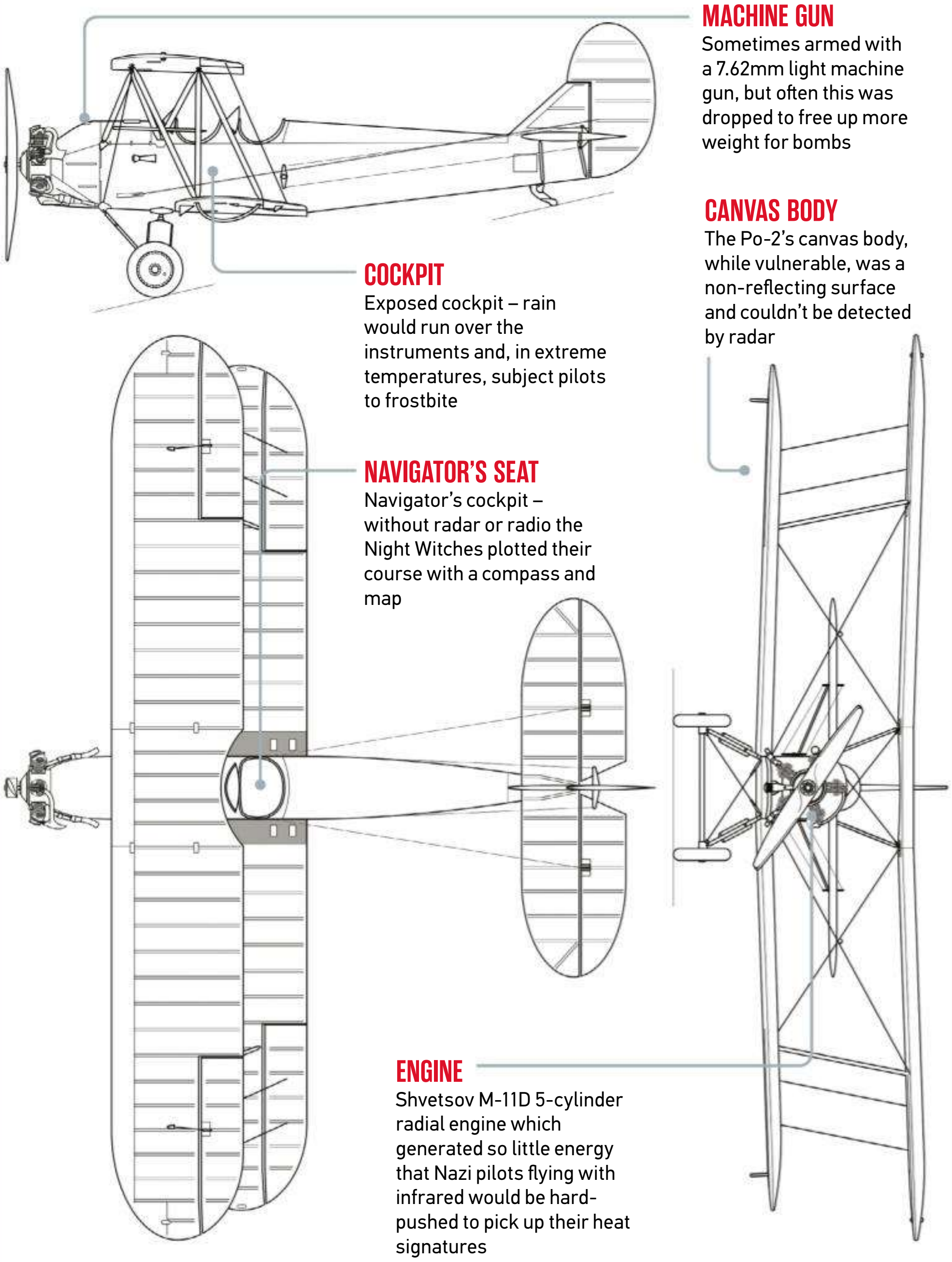
So unnerved were the enemy that many refused to smoke at night, lest the glow of their cigarettes reveal their positions, and an Iron Cross – the highest military honour awarded to German soldiers – would be issued to anyone who brought down a Night Witch.

They used wood-frame Polikarpov Po-2 biplanes – mockingly referred to as 'sewing machines' – that first saw service in 1928 and had since been relegated to crop-dusting and training. The Po-2's open cockpit exposed the pilot and navigator to frostbite, the small carrying capacity meant their two bombs were at the expense of even a radio and often a light machine gun, and so to keep up constant pressure on the Nazis were forced to fly over and over again – Popova's record was 18 gruelling sorties in one night. With an all-female ground crew as well as pilots, they moved from airbases behind Soviet lines to temporary airfields closer to the front and, as night fell, they deployed on their seemingly neverending missions from Popova's native Donetsk Basin to the besieged Crimea, to Belarus and Poland, and eventually even Germany itself, with planes landing and taking off three minutes apart. Always on the move and always in action, each Night Witch would fly around 1,000 missions by the end of the war when the average for a British bomber crew was 30.

All this discomfort was nothing compared to the incredible dangers posed by their obsolete biplanes which flew too low to bail out of, and would burst into to flames with sickening ease when hit by tracer shells from the 'circus of flak' – the rings of wicked 37mm anti-aircraft guns pointed skyward,

THE WITCHES' BROOM

Close up on the Night Witches' infamous Polikarpov Po-2 'sewing machine' dive bomber



MACHINE GUN
Sometimes armed with a 7.62mm light machine gun, but often this was dropped to free up more weight for bombs

CANVAS BODY
The Po-2's canvas body, while vulnerable, was a non-reflecting surface and couldn't be detected by radar

COCKPIT
Exposed cockpit – rain would run over the instruments and, in extreme temperatures, subject pilots to frostbite

NAVIGATOR'S SEAT
Navigator's cockpit – without radar or radio the Night Witches plotted their course with a compass and map

ENGINE
Shvetsov M-11D 5-cylinder radial engine which generated so little energy that Nazi pilots flying with infrared would be hard-pushed to pick up their heat signatures

THE LUFTWAFFE

MODEL - FOCKE-WULF 190
ENTERED COMBAT - 1941
MAX SPEED - 426 MPH
MAX ALTITUDE - 40,000 FEET
WEAPONS -
2X 13 MM MACHINE GUNS
2X 20 MM CANNONS

“I BECAME A CONCENTRATION OF NERVES AND TENSION. MY WHOLE BODY WAS SWEPT BY FEAR OF BEING KILLED”

Night Witches photographed while looking through a mission plan together

guided by searchlights whose touch often meant death. To combat the searchlights the Night Witches developed a strategy that tested their already beleaguered nerves, flying in groups of three, the first two planes would deliberately probe the circus until they had the attention of the searchlights and their accompanying symphony of gunfire, allowing the third plane to dip in and deliver its payload.

“We were flying without parachutes,” said Popova. “We were not able to bail out. The whole crew which was shot during the night flight was burning alive, and it was awful. It was an absolutely unbearable sight. This was the most tragic part.”

“You shouldn’t misinterpret my words and think we faced death openly and bravely – it is not true,” said Mariya Smirnova, one of the unit’s most decorated pilots. “We never became accustomed to fear. Before each mission and as we approached the target, I became a concentration of nerves and tension. My whole body was swept by fear of being killed.”

With a top speed of around 151 kilometres per hour (94 miles per hour) when fully loaded, this was well below the speed at which the engines of the Luftwaffe’s infamous Messerschmitt Bf 109 and Focke-Wulf Fw 190 fighters would stall, making the Polikarpov Po-2 too slow and nimbly manoeuvrable to effectively engage in air combat – often dropping out of sight in the darkness by the time the German fighters had turned back around. Eventually the Germans were forced to start deploying their own mothballed biplanes to counter them. As advantages go, having a plane too clunky to dogfight was scarcely a fair trade for their vulnerability or the punishing frequency of their deployment, nor to the standard by which they were held by male airmen when they first deployed. Though the Night Witches were eventually awarded the coveted ‘Guards Regiment’ status, along with the variety of battle honours and medals they had rightfully earned, the prejudices that kept women out of combat until Operation Barbarossa reached its height weren’t easily dispelled.

Clad in poorly fitting second-hand uniforms cast aside by male pilots, oversized boots stuffed with newspaper and given two years’ training in only six months, Comrade Stalin may have held Marina Raskova in some regard, but to many male airmen and officers, these 20-somethings were nothing more than the ‘skirt regiment.’ Some male pilots refused to let their planes be maintained by female ground crews, and officers made disparaging reports of airwomen colouring in their lips with the navigation pencil used to mark routes on maps, dancing on the airfield and keeping kittens in their barracks.

“What an exceptional case!” read one official report. “A regiment composed solely of girls! And what’s more, these girls were eager to fight! But, after all, they were bound to become scared and cry! Besides – the crux of the matter was – could they fight?”

They could and they did, and amazingly the Soviet Union’s female flyers managed this without sacrificing their femininity. While well aware that they were being held to the same – if not higher – standards of male pilots, the motto of the 588th was “You are a woman, and you should be proud of that.”

Nobody exemplifies this better than the ‘White Rose of Stalingrad’, Lydia Litvyak, a pilot with one of the Night Witches’ sister regiments. The world’s first female fighter ace – a title awarded for a certain number of enemy kills, usually around five – she was reported to have painted a white rose on the nose of her Yak-1 fighter and kept bouquets of wildflowers in the cockpit, dyed her hair with peroxide obtained from the nearest hospital and would make scarves out of parachute material.

Nadia Popova similarly never forgot the motto of the 588th – despite the rigours of war, she would

MAGNIFICENT FEMALE FLYING ACES

The other female flyers that took to the war-torn skies of the Thirties and Forties

THE WOMEN OF THE ATA (UK)

Originally set up to fly mail and medical supplies in 1940, with the demand for pilots flying military duties the Air Transport Auxiliary began to ferry planes from factories to airfields. Over 160 women from Britain and the Commonwealth (plus volunteers from other nations) would fly everything from the Spitfire to the B-25 Mitchell, and by 1943 their pay would be placed in line with their male counterparts. Credited with a vital role in the Battle Of Britain, 15 would be killed in service, including pioneering aviatrix Amy Johnson – the first woman to fly from England to Australia – who crashed into the Thames Estuary.

THE WASPS (USA)

With male pilots needed at the front the Women Airforce Service Pilots was formed in 1942 and, like the two earlier organisations it replaced, ferried planes around the US, but also transported cargo, towed targets in live fire exercises and a few even tested the new generation of rocket and jet-powered fighters for the US Air Force. Rather wonderfully WASP's winged munchkin mascot, the gremlin Fifinella, was invented by children's author Roald Dahl and drawn by founding father of feature-length animation Walt Disney. 1,074 women would serve in total and, although they never saw combat, 38 died in accidents.

SABIHA GÖKÇEN (TURKEY)

Lydia Litvyak may have been the first female fighter ace in history, but in 1936 Sabiha Gökçen became the world's first female fighter pilot. Adopted by Turkish leader Mustafa Kemal Atatürk when she was 12 years old, Sabiha became captivated by an airshow ten years later. Upon telling her adopted father that she wanted to become a pilot, Atatürk enrolled her as the Turkish Airforce's first female trainee. Though combat missions were rare (32 hours in all), she nonetheless flew 22 different types of aircraft and racked up a notable 8,000 hours in the air during her career.

fluff up her hair – pressed flat by the leather flying cap – in a tortoiseshell mirror after each flight, and would eventually meet her future husband – pilot Semyon Kharlamov – in a convoy, after being shot down and separated from her unit. When Popova ended the war in the ruins of the Reichstag, Semyon was by her side, and they wrote their names together on the crumbling walls.

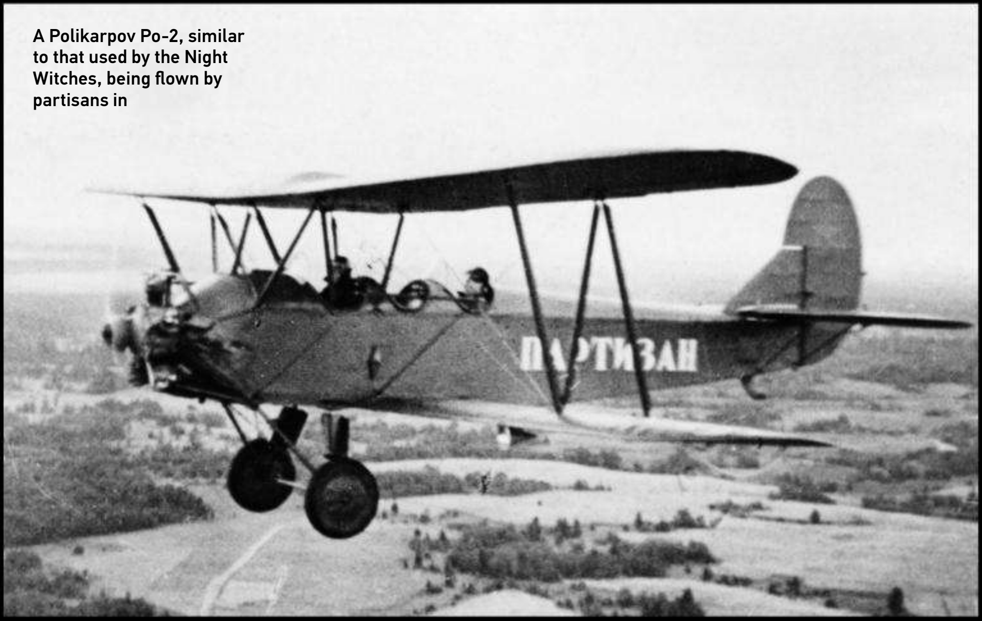
Like so many of Popova's contemporaries, Marina Raskova and Lydia Litvyak died in combat – Raskova in 1943, crashing into the banks of the Volga river in a violent snow-storm, and Litvyak later the same year, ambushed by Messerschmitts while she attacked a German bomber. She was only 21.

Popova survived, married, and returned to her home town a hero, greeted by crowds throwing flowers and a marching band – a more triumphant and provincial echo of Marina Raskova's state funeral in Moscow; the first the Soviet Union had given in wartime and a tribute to her status.

Despite the glory and the tragedy, the 588th and its sister regiments would be sadly disbanded and, much like in Britain and America, the role of women who had served their country every bit as faithfully and bravely as their husbands, fathers and brothers was expected to return to its pre-war setting. While many of them were forced to return home and become housewives – their deeds largely unremarked upon until the Eighties when the old authoritarian Russian regime began to crumble and the Europe bequeathed by Joseph Stalin was finally dismantled – Nadia Popova continued to work as a flight instructor, and when she died on 8 July 2013, aged 91, her death was mourned not just in her native Russia, but around the world.

History provides few enough examples of women being able to endure the same terrible hardships and perform the same incredible feats as men, and fewer still exist where they were allowed to accomplish these things on their own terms – as women. These 20-something girls from collective farms and steel towns defied society once when they became pilots, and then defied it again when they abandoned their ironing and took to the skies in war, and their example in an era when the idea of women in combat roles is still contested defies it once more. Throughout it all they never forgot, "You are a woman, and you should be proud of that."

"At night sometimes," Popova recalled. "I look up into the dark sky, close my eyes and picture myself as a girl at the controls of my bomber and I think, 'Nadia, how on earth did you do it?'"



A Polikarpov Po-2, similar to that used by the Night Witches, being flown by partisans in

Images source: Getty; Kaboldy/Wikimedia

THE FLYING TIGERS

How the outnumbered fighter aces of the American Volunteer Group defied Imperial Japan in war-torn China

Left: The ferocious mouths painted on the nose were inspired by the tiger sharks painted by RAF pilots in the Mediterranean theatre on their planes

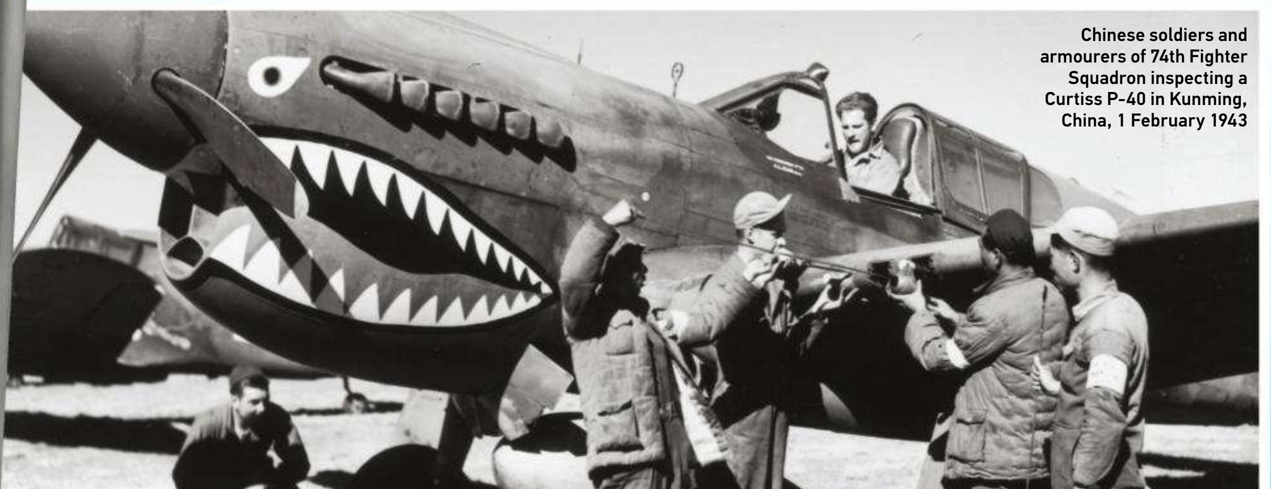
They expected a routine mission. Japanese planes owned the skies over China, but the pilots and crewmen who boarded the ten Mitsubishi Ki-21 twin-engine bombers on the morning of 20 December 1941, intended to cover the 300 air miles from their base at Hanoi to the Chinese city of Kunming, drop their incendiaries and 500-pound bombs, and return unscathed. There was no need for a fighter escort.

For a decade the armed forces of Imperial Japan had been at war on the Asian continent. They staged the Mukden Incident in 1931 as a pretext to seizing the northern province of Manchuria from China and another so-called 'incident' in 1937 at the Marco Polo Bridge, near the city of Peking, to escalate the simmering conflict into what became known as the Second Sino-Japanese War. The Chinese resisted bravely on land and in the air. However, the resources of the Nationalist government of Generalissimo Chiang Kai-shek were few and often ineffective in the face of the Japanese onslaught.

Nowhere was the military contest more unequal than in the air. The Japanese flew modern planes, their pilots were well trained, and with each mission their confidence grew. Japanese fighter pilots regularly shredded the defending planes of the Republic of China Air Force, most of which were obsolete American-designed Curtiss BF2C Goshawk biplanes along with a few British, Italian, and Soviet types. Chinese pilots were often the sons of wealthy, influential families who graduated from flight training with wings pinned to their chests regardless of proficiency.

These ill-prepared fliers were often killed, their valuable aircraft destroyed in takeoff and landing incidents, while those who managed to engage in aerial combat fell to Japanese guns at an alarming rate. By 1941, although the Republic of China Air Force officially listed a complement of 500 planes, which was probably overstated, barely 90 aircraft were considered battleworthy at any given time.

However, during that morning mission to Kunming, the Japanese were made keenly aware that the situation in the skies above China, and neighbouring Burma, had been dramatically altered. As they approached their target, the Japanese pilots spotted something unusual. Four tiny dots were rapidly bearing down on them, and it was soon apparent that these were hostile fighter planes. The Japanese released their bombs



Chinese soldiers and armourers of 74th Fighter Squadron inspecting a Curtiss P-40 in Kunming, China, 1 February 1943

30 miles southeast of Kunming and turned for home at high speed.

These unexpected attackers were, in fact, Curtiss P-40 Tomahawk fighters led by Lieutenant John V 'Scarsdale Jack' Newkirk. Ten more P-40s joined the pursuit, and one by one the Japanese bombers were shot to pieces, exploding in midair or trailing thick, black smoke as they spiralled into the ground. A single bomber survived to report the details of the harrowing mission. The crewmen described their attackers as heavy, single-engine fighters with snarling shark's mouths painted on their engine cowlings. Their comrades had been the first victims of the flamboyant airmen of the American Volunteer Group (AVG), popularly known as the Flying Tigers.

The initial aerial combat mission of the Flying Tigers had been a resounding success, and newspaper reports flashed across the globe. This provided a much-needed morale boost for the American public, still stunned by the sudden attack on Pearl Harbor that had plunged the nation into World War II only two weeks earlier, and offering hope to the beleaguered Chinese.

For years, Chiang Kai-shek had realised that he needed help from the United States to stem the Japanese tide. However, a major obstacle to securing American aid was the simple fact the country was not a belligerent during the 1930s. An overt act to provide military support to China might, in fact, provoke the Japanese into declaring war on the United States. Nevertheless, Chiang possessed two quite powerful assets in his quest for American assistance. His wife, Soong Mei-ling, also known as Madame Chiang, was a charming and shrewd political pragmatist, while the Nationalists also benefited from a powerful lobby in the United States led by her brother, TV Soong, who moved easily through the halls of power in Washington, DC.

"ONE BY ONE THE JAPANESE BOMBERS WERE SHOT TO PIECES, EXPLODING IN MIDAIR OR TRAILING THICK, BLACK SMOKE AS THEY SPIRALLED INTO THE GROUND. A SINGLE BOMBER SURVIVED TO REPORT THE DETAILS OF THE HARROWING MISSION"

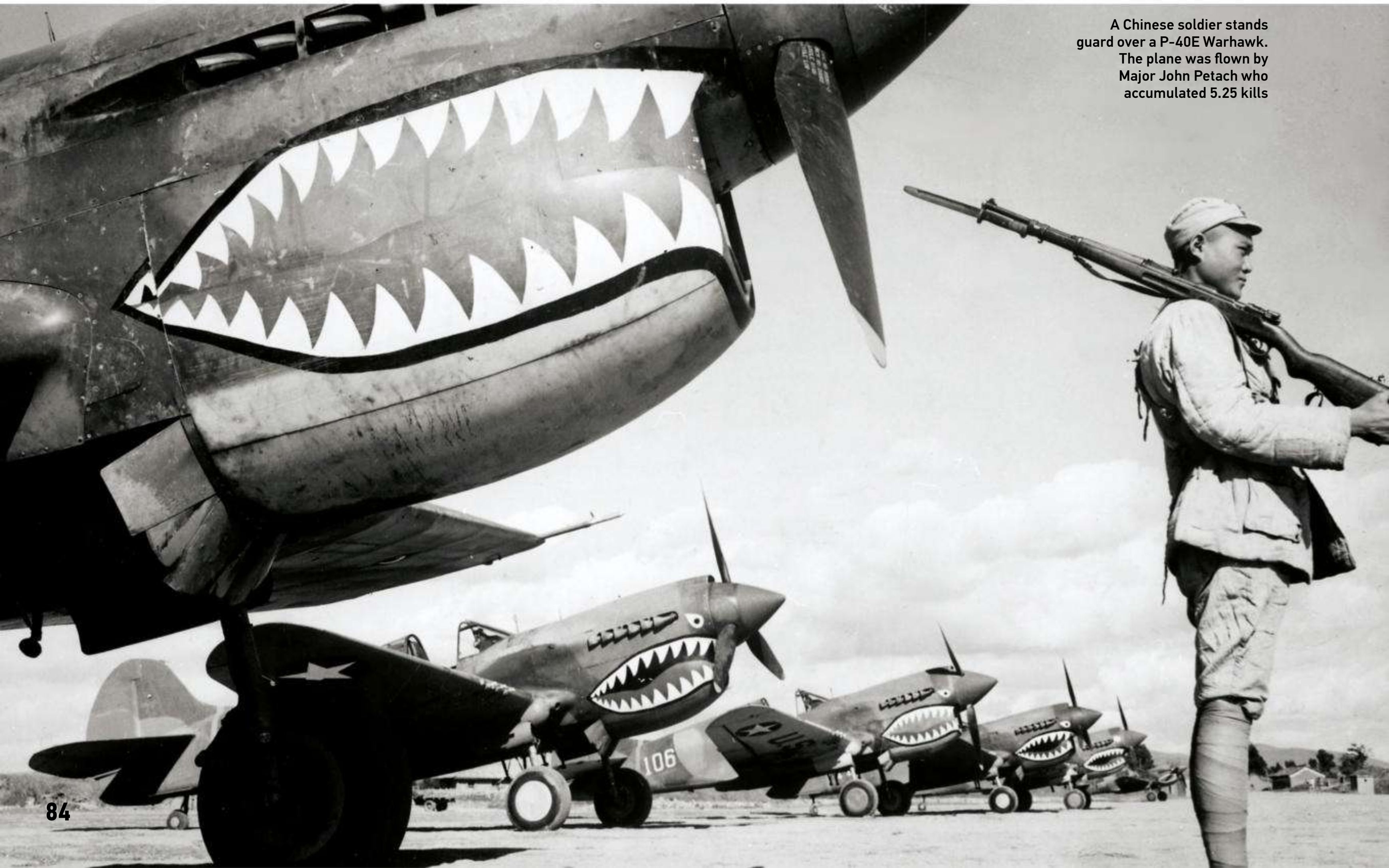
Madame Chiang was charged with raising the combat prowess of the Republic of China Air Force, and she proved quite capable in the role. Without doubt, her most significant accomplishment was in persuading a grizzled American captain to come out of retirement in Louisiana, travel halfway around the world, and take on the monumental task of revitalising that flagging fortunes of the Chinese air arm.

Claire Lee Chennault was a veteran of the US Air Corps and a former stunt flier. To the detriment of his career, he had also been a tireless, vocal champion of developing fighter aircraft and tactics, during an era that was dominated by senior officers who promoted the deployment of heavy bombers bristling with guns. The prevailing sentiment among these officers was that the big bombers could defend themselves without the help of fighter escorts, pound enemy cities and military targets, and actually win a modern war by raining devastation from the skies.

Chennault never bought into that concept and argued forcefully against the prevailing fighter tactics that emerged during World War I. "There was too much of an air of medieval jousting in the dogfights," he said boldly, "and not enough of the calculated massing of overwhelming force so necessary in the cold, cruel business of war." He believed that fighter pilots should work together in pairs and in larger numbers rather than as lone hunters, and in 1935 he put his theories on paper in the book The Role of Defensive Pursuit.

Within months of his book's publication, Chennault was serving as an instructor at Maxwell Field, Alabama. He was notified that the teaching of fighter tactics was to be terminated. Suffering from hearing loss sustained during hours of flying in open cockpits along with chronic bronchitis, Chennault retired with 20 years of service in 1937, still a junior officer at the age of 47.

Although few in Chennault's own country had paid any attention to his fighter doctrine, General Mao Pang-tso of the Republic of China Air Force attended one of his flying demonstrations and passed along his favourable impressions of the American pilot's skills. It was then that Madame Chiang charmed Chennault, who visited the country in the spring of 1937 during negotiations to procure his services. He later remarked, "She will always be a princess to me."


A Chinese soldier stands guard over a P-40E Warhawk. The plane was flown by Major John Petach who accumulated 5.25 kills

In his own way, Chennault learned to manipulate Madame Chiang, tendering his resignation to her when the Nationalist government moved too slowly regarding some issue or failed to provide support in a timely manner. Madame Chiang always refused to accept the commander's resignation, and she remained his foremost advocate during later contentious disagreements with General Joseph Stilwell, the American commander in the China-Burma-India Theater (CBI) during World War II. Through his association with Madame Chiang, and the exploits of the Flying Tiger pilots, he would soon command, Chennault became one of America's early heroes of the war, exerting tremendous influence on its conduct in the CBI.

Chennault took to his initial task with renewed vigour, enhancing the training of Chinese pilots and establishing an early warning network to alert his bases to incoming Japanese air raids. Among the formidable enemy aircraft his pilots faced was the Nakajima Ki-27 fighter, which was introduced in 1937, and later the Nakajima Ki-43 and the legendary Mitsubishi A6M Zero.

Chennault admonished his pilots to be wary of the nimble enemy planes and to avoid single combat. "Never get into a dogfight with the Zero," he told them. "When you spot the Zeroes, make one diving run with guns blazing, and then get the hell out of there!"

Chennault did his best, but Japanese air power was overwhelming, and large formations of enemy bombers hit Chinese cities at will while fighter planes strafed Chinese troops on the ground. As the situation worsened, Chiang Kai-shek turned to his brother-in-law. Soong persuaded President Franklin D Roosevelt to allow Chennault to quietly recruit American pilots and to eventually purchase 100 new Curtiss P-40 fighters for these 'volunteers'. The planes had been earmarked for the British through the Lend-Lease program but were considered outdated and rejected for service with the RAF.

Six months prior to Pearl Harbor, Chennault had successfully recruited 112 American pilots, who were allowed to resign from the US armed forces and join the Chinese with the promise that they could return to the American military if the United States became a belligerent or when their contracts with the Chinese were completed. The lure of adventure and a fat paycheck weighed heavily in the decisions of these young men. The American Volunteer Group paid $750 a month to a squadron leader, $675 to a flight leader, and $600 to a wingman. Ground crewmen were compensated handsomely from $150 to $300 a month depending on an individual's skill set. To sweeten the pot, the Generalissimo added a $500 bounty for every confirmed shootdown of a Japanese plane.

In the interest of operational secrecy, the American pilots were provided with fake documents and information that presented them as individuals with occupations from engineers to tailors and Vaudeville performers. "I joined the AVG in July 1941," remembered Donald Whelpley, who became the group's lead meteorologist. "At that time my duty assignment was Navy meteorologist to Patrol Squadron 54, Naval Air Station, Norfolk, Virginia," he continued. "When the Navy finally realised that I was serious about resigning my commission to join Chennault in

CBI AIR RAGE

Flying Tiger pilots in their Curtiss P-40 Warhawk fighters fought superior numbers of Japanese planes above China and Burma

CURTISS P-40 WARHAWK

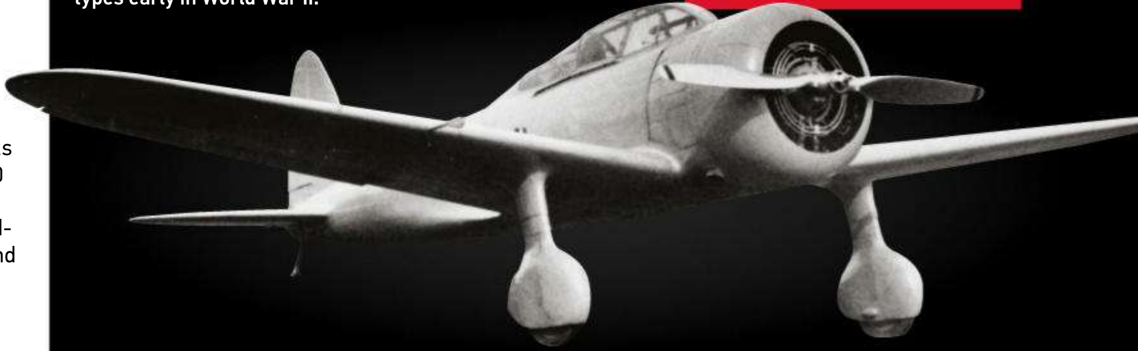
Fast in level flight and capable of out-diving the Japanese fighters that the pilots of the American Volunteer Group faced, the Curtiss P-40 fighter was well suited to the 'boom and zoom' tactics advocated by Flying Tiger boss Claire L Chennault.

YEARS IN SERVICE: 1939-1945
MAX SPEED: 580 KM/H (360 MPH)
ARMAMENT: SIX .50-Z (12.7MM) BROWNING M2 MACHINE GUNS

NAKAJIMA KI-27

Lightly armed and armoured, the Nakajima Ki-27 fighter, nicknamed 'Nate' by the Allies, was highly manoeuvrable and easily out-turned Allied opponents flying Curtiss P-40s in a dogfight. However, it was rapidly outclassed by other aircraft types early in World War II.

YEARS IN SERVICE: 1937-1945
MAX SPEED: 470 KM/H (292 MPH)
ARMAMENT: TWO 7.7MM TYPE 89 MACHINE GUNS



"THE NAKAJIMA KI-27 FIGHTER WAS HIGHLY MANOEUVRABLE AND EASILY OUT-TURNED ALLIED OPPONENTS"

MITSUBISHI A6M ZERO

One of the legendary fighters of World War II, the Mitsubishi A6M Zero was highly manoeuvrable, heavily armed, and superior to early Allied types. ROC Air Force pilots faced the Zero, but debate continues as to whether Flying Tiger pilots did.

YEARS IN SERVICE: 1940-1945
MAX SPEED: 534 KM/H (332 MPH)
ARMAMENT: TWO 7.7MM TYPE 97 MACHINE GUNS; TWO 20MM TYPE 99-1 CANNON

China, they released me for a one-year tour with the AVG. Little did any of us realise what we had gotten ourselves into."

The recruits sailed to China and maintained their cover. Some of them posed as employees of the Central Aircraft Manufacturing Company (CAMCO), which operated a facility in Burma that assembled planes for the Chinese. By the summer of 1941, Chennault was putting them through their paces at an airfield in Loiwing, China, near the border with Burma (Myanmar).

A remedial training school was established after it was discovered that some of the recruits had lied about their experience in 'pursuit planes' and had only flown bombers or transports. Chennault lectured the aviators regularly, often using a chalkboard to illustrate his points, and shook his head in despair when one of his precious P-40s was damaged in training. The young pilots embraced Chennault's teachings and began referring to the commander as 'Old Leatherface'.

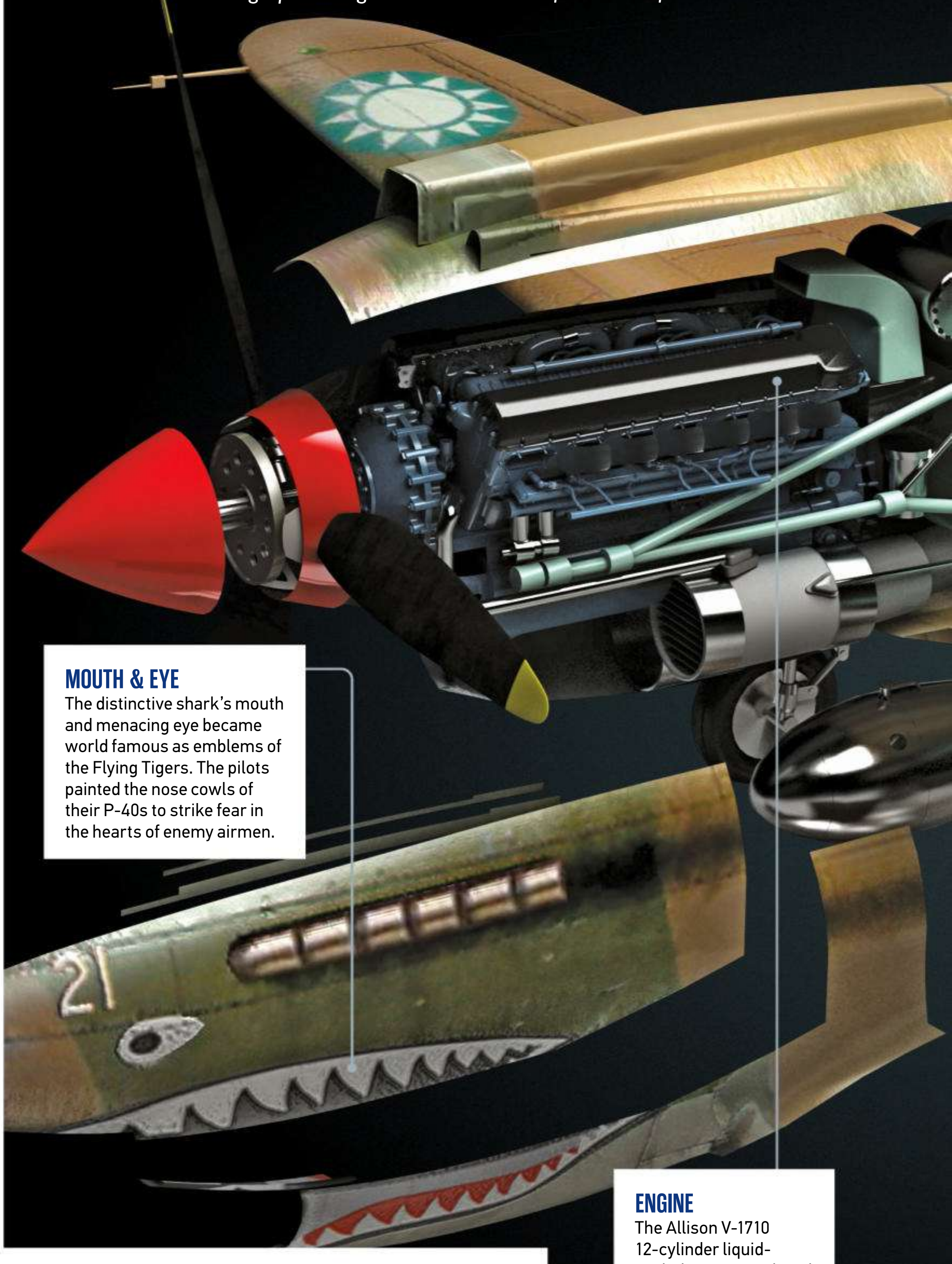
The AVG's P-40s were shipped in crates from New York, but even before they were assembled and took flight, one of the planes met an unfortunate fate. The first of the crates was being loaded into the hold of a freighter when the cable snapped, sending the entire load into the Hudson River below. The engine and all the cockpit controls were damaged beyond repair – and just like that the AVG was down to 99 planes. If Chennault considered the accident a bad omen, he shrugged it off and kept that sentiment to himself. The remaining planes were shipped to Burma, where they were assembled at the CAMCO factory outside the port city and capital of Rangoon. Test flights took place at a nearby airfield, and the P-40s were then delivered to the AVG.

Chennault organised his planes and pilots into three squadrons of equal size. The 1st Squadron, with fuselage numbers 1-33, was nicknamed the Adam and Eves. The 2nd Squadron, fuselage numbers 34-66, was dubbed the Panda Bears, and the 3rd Squadron, fuselage numbers 67-99, was called the Hell's Angels. For a time, the AVG pilots and their ground crew shared the Kyedaw airfield near Toungoo, Burma, with units of the RAF.

Some of the AVG pilots heard that RAF personnel of No 112 Squadron, flying P-40s based in North Africa, had painted the mouths of fearsome tiger sharks on their engine cowlings, probably copying the design from a unit of the German Luftwaffe they had encountered over the Mediterranean Sea. The artists among the Americans went to work replicating the razor-toothed jaws, and soon the Chinese began referring to the mercenary pilots as 'Flying Tigers'. The nickname stuck, and a cartoonist from Walt Disney Studios complemented the gaping sharks' mouths with the image of a stylish Bengal tiger wearing wings and leaping through a 'V' for victory emblazoned on the fuselages of many P-40s.

CURTISS P-40

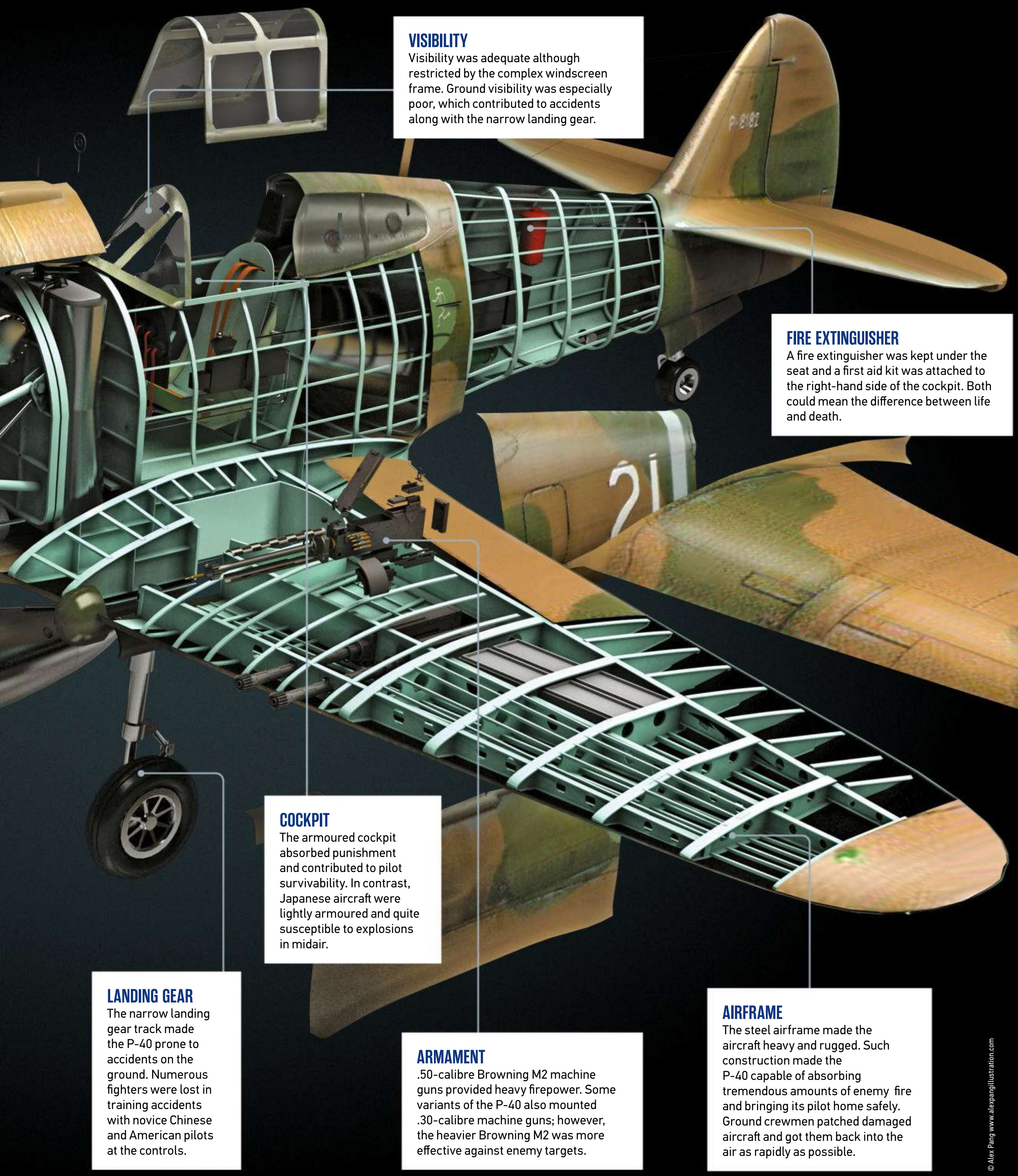
The warbirds of the avg may be remembered for their iconic nose art, but it took more than graphic design to win the air war for chinese freedom



MOUTH & EYE
The distinctive shark's mouth and menacing eye became world famous as emblems of the Flying Tigers. The pilots painted the nose cowls of their P-40s to strike fear in the hearts of enemy airmen.

ENGINE
The Allison V-1710 12-cylinder liquid-cooled engine produced 1,350 horsepower and a maximum speed of 378 miles per hour. The V-1710 was the only engine of its kind produced in the United States during World War II.

> "CHENNAULT ADMONISHED HIS PILOTS TO BE WARY OF THE NIMBLE ENEMY PLANES AND TO AVOID SINGLE COMBAT. 'NEVER GET INTO A DOGFIGHT WITH THE ZERO,' HE TOLD THEM. 'WHEN YOU SPOT THE ZEROES, MAKE ONE DIVING RUN WITH GUNS BLAZING, AND THEN GET THE HELL OUT OF THERE!'"



VISIBILITY

Visibility was adequate although restricted by the complex windscreen frame. Ground visibility was especially poor, which contributed to accidents along with the narrow landing gear.

FIRE EXTINGUISHER

A fire extinguisher was kept under the seat and a first aid kit was attached to the right-hand side of the cockpit. Both could mean the difference between life and death.

COCKPIT

The armoured cockpit absorbed punishment and contributed to pilot survivability. In contrast, Japanese aircraft were lightly armoured and quite susceptible to explosions in midair.

LANDING GEAR

The narrow landing gear track made the P-40 prone to accidents on the ground. Numerous fighters were lost in training accidents with novice Chinese and American pilots at the controls.

ARMAMENT

.50-calibre Browning M2 machine guns provided heavy firepower. Some variants of the P-40 also mounted .30-calibre machine guns; however, the heavier Browning M2 was more effective against enemy targets.

AIRFRAME

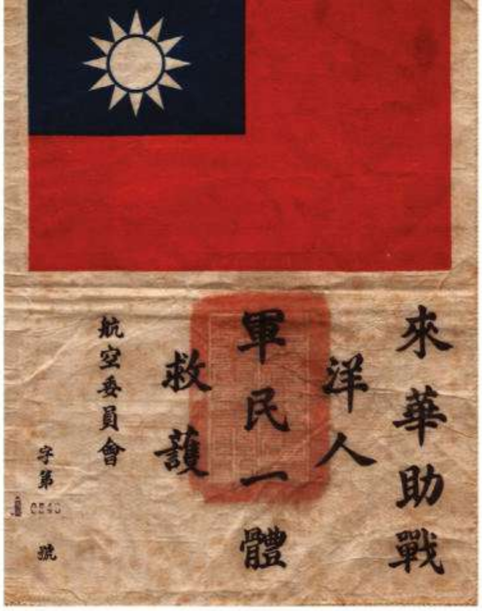
The steel airframe made the aircraft heavy and rugged. Such construction made the P-40 capable of absorbing tremendous amounts of enemy fire and bringing its pilot home safely. Ground crewmen patched damaged aircraft and got them back into the air as rapidly as possible.

© Alex Pang www.alexpangillustration.com

Although they flew as a combat unit for only seven months, from December 1941 to July 1942, the Flying Tigers gained lasting fame in the skies of the CBI during World War II. Training mishaps, mechanical failures – particularly with the P-40's Allison engine – and combat damage continually reduced the number of operational aircraft, and Chennault never had more than 55 planes and 70 pilots at his disposal. Still, the Flying Tigers compiled a remarkable record, debunking the myth of Japanese aerial invincibility in the process.

During those frenetic days, the AVG claimed 299 enemy planes – destroyed both in the air along with scores on the ground – shot up during dangerous strafing runs. Its top scoring aces accounted for more than 60 Japanese aircraft. They included Robert Neale with 13 victories, Ed Rector with 10.5, David Lee 'Tex' Hill with 10.25, and George Burgard, Robert Little, and Charles Older each with ten.

In turn, the Flying Tigers lost four pilots in the air to Japanese planes, six who were killed during strafing runs against ground targets, three who perished in training accidents, and three who died during enemy bombing raids. Three AVG pilots were shot down and taken prisoner. A dozen P-40s were lost in aerial combat, while another 61 were destroyed on the ground during enemy air raids, in training accidents, or deliberately when the airfield at Loiwing was hastily evacuated with the fall of Burma in May 1942.



來華助戰
洋人
軍民一體
救護
航空委員會
字第 0540 號

Above: A 'blood chit' given to the Flying Tigers by the Nationalist Chinese government. It would be used as identification so that downed airmen could get aid from any Chinese civilian they came across

Chennault initially deployed the Flying Tigers into two groups, defending both Rangoon and western China, where the Burma Road, the tortuous overland lifeline of supplies that stretched 600 miles from Lashio in northern Burma to Kunming, snaked through mountains and valleys.

The first Flying Tiger missions were flown on 8 December 1941, the day after Pearl Harbor. As word of their success became public, the pilots were lionised in the press. Following one notable air battle, a newspaper crowed, "Last week ten Japanese bombers came winging their carefree way up into Yunnan, heading directly for Kunming, the terminus of the Burma Road. 30 miles south of Kunming, the Flying Tigers swooped, let the Japanese have it," the paper continued. "Of the ten bombers, four plummeted to Earth in flames. The rest turned tail and fled. Tiger casualties: none."

Even the Japanese grudgingly acknowledged the toll the Flying Tigers were taking as the aggressive pilots employed Chennault's maxim, "Use your speed and diving power to make a pass, shoot, and break away! Never, never, in a P-40, try to outmanoeuvre and perform acrobatics with a Jap Zero. Such tactics, take it from me, are strictly non-habit forming."

Radio Tokyo issued a stern warning that AVG personnel rather enjoyed. "The American pilots in Chinese planes are unprincipled bandits," the propagandist blared. "Unless they cease their unorthodox tactics they will be treated as guerrillas." The broadcast was a not-so-veiled threat that if a Flying Tiger pilot was captured he might well be executed.

Adding to the Flying Tiger mystique was the cavalier attitude of the pilots and their disdain for military protocol. Little attention was paid to rank or station, and there was simply no such thing as a regulation uniform. Footwear included cowboy boots with thick heels. The pilots also engaged

CHRISTMAS COMBAT

Perhaps the most dramatic engagement of the Flying Tigers' brief combat history took place on Christmas Day, 1941

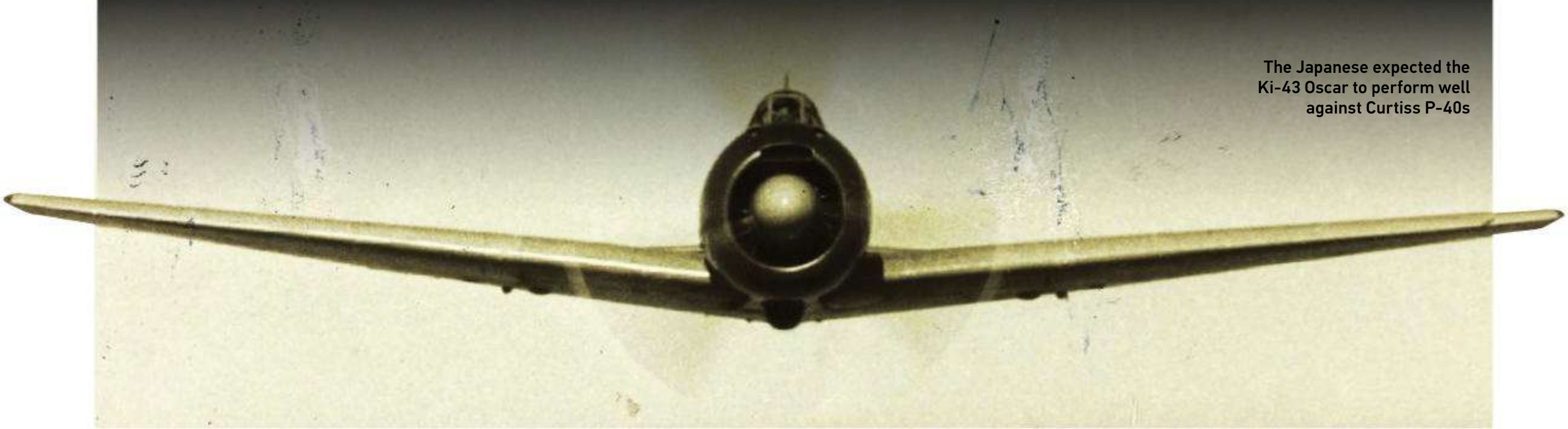
On 25 December 1941, the Japanese launched their second heavy air raid against Rangoon, the Burmese capital, in 48 hours. At Mingaladon airfield, north of the city, Christmas Day was a muggy 46 degrees Celsius, smothering the pilots of the Flying Tigers' 3rd Squadron, the Hell's Angels. Suddenly, the air raid siren wailed. 13 Hell's Angels pilots sprinted to their Curtiss P-40 Tomahawk fighters, joined by 16 pilots of No 67 Squadron RAF flying the Brewster Buffalo.

Just past noon, the characteristic V-formations of 71 enemy bombers and at least 30 fighters appeared. Charles Older, who had flamed two enemy bombers on 23 December, roared upward in a near-vertical climb, opening fire at 200 yards and tearing an enemy plane apart with his six .50-calibre machine guns. Executing a flawless 'boom and zoom', he broke away in a power dive and made another pass. This time, a second bomber fell to his guns.

When the Japanese turned toward home, Older pounced on an escorting Nakajima Ki-43 'Oscar' fighter and sent it spiralling earthward for his fifth kill. He had become an ace.

Flying Tiger Robert P 'Duke' Hedman was credited with four Japanese bombers and a fighter, attaining the coveted status of ace in a single day. George McMillan shot down three enemy planes, while Tommy Haywood and Ed Overend each claimed a pair to their tally.

As Robert 'RT' Smith pulled away from his second kill against the bombers, he confronted an Oscar slicing toward him head-on, guns blazing. Smith held steady. His P-40 shuddered as bullets from its guns raked the enemy. In a flash, the Japanese plane passed below, billowing smoke before rolling over and plunging into the Gulf of Martaban. The Flying Tigers and their RAF allies claimed 32 aerial victories in the swirling Christmas Day battle, while only two P-40s were shot down along with four Buffaloes.



The Japanese expected the Ki-43 Oscar to perform well against Curtiss P-40s

General Henry 'Hap' Arnold inspects the Flying Tigers squadron with Claire Chennault

Maintenance on a Curtiss P-40 at Kunming, China, circa 1941

in aerial antics, performing aerobatic feats and slow, low victory rolls to celebrate kills when they returned from combat missions.

Alcohol flowed freely, and one story relates that a group of Flying Tigers persuaded the pilot of a C-47 transport plane to conduct a nocturnal 'air raid' on Hanoi. The Americans scrounged for any explosives they could find, including old ordnance of French and even Russian manufacture. Fortified with liquid courage, they packed the C-47's cargo hold with bombs. When they arrived above their target, they reportedly opened the side door, kicking and rolling the explosives into the night.

Before Chennault withdrew all AVG fighters from Burma in the spring of 1942, the Flying Tigers engaged in several large-scale aerial battles with the Japanese, and their RAF allies joined in as well. On 23 December 1941, a flight of 12 Hell's Angels P-40s along with Brewster Buffalo fighters of No 67 Squadron RAF engaged a formation of Japanese Ki-21 bombers headed for Rangoon. The Allied planes shot down five bombers and four escorting fighters, but a pair of P-40s was lost. Despite the better kill results, Chennault considered the mission a setback since he had few planes or pilots to spare.

On 25 February 1942, a force of 166 Japanese fighters and bombers attacked Rangoon. Nine Flying Tiger pilots gunned the engines of their P-40s and descended on the enemy like avenging angels. 24 Japanese aircraft were shot down in flames, while three P-40s were lost.

A day later, 200 more Japanese aircraft appeared above the city, and six Flying Tiger P-40s mounted a spirited defence, roaring through the Japanese formations to claim 18 enemy planes destroyed.

19 Flying Tiger pilots were officially credited with five or more confirmed aerial victories during their combat tours with the AVG, achieving ace status. Tex Hill served as a flight leader and squadron commander with the Panda Bears and, in addition to his 10.25 kills with the AVG, finished the war with 15.25. He scored his first aerial victories on 3 January 1942, during a strafing mission against the Japanese airfield at Tak, Thailand, and vividly recalled the encounter.

"I was really excited as we neared the target area. It was then that I noticed there were too many of us in formation," Hill remembered. "Somehow a Japanese Zero swooped in and got on the tail of the P-40 in front of me. I pulled the trigger, fired my machine guns, and shot the Zero down. Unknown to me there was another Zero up there with us, but I didn't see him in time. He put 33 bullet holes in my P-40 fuselage before I could break away.

"Later, during that same mission, another Jap came in straight at me – head on!" Hill continued. "I held the machine-gun trigger down. We got closer and closer. I thought we were going to collide, but he just blew up in front of me. I never touched a piece of his wreckage either."

Although Hill identified his victims as Zeroes, other accounts refer to them as a pair of Ki-27s. Chennault also had described enemy fighters as Zeroes, and debate continues as to whether the Flying Tigers actually fought the fabled Japanese plane during their seven months of aerial combat. Some sources support the claim that the P-40 pilots did battle Zeroes, while others assert that the Imperial Japanese Navy had withdrawn its assets from the Asian mainland prior to the AVG's entry into combat. In either case, the majority of enemy fighters that the American pilots duelled in the air above China and Burma were Ki-27s, nicknamed 'Nate' by the Allies, and the Ki-43 'Oscar', a Japanese Army fighter that bore a close resemblance to the Zero – which accounted for some confusion.

Through it all, the Flying Tigers' ground crews performed minor miracles, managing to keep enough P-40s in the air to continually battle the Japanese. Damaged planes were cannibalised for spare parts. Supplies were scarce, and those that did arrive had travelled an immense distance across ocean, by rail, and in the air. Despite having no bomb racks fitted to their planes, the Flying Tigers even improvised some explosives, rigging pipe bombs to parachutes originally intended for flares and filling empty scotch and whiskey bottles with gasoline as makeshift incendiaries.

During an interview with a war correspondent, one Flying Tiger pilot made a point of asking the reporter to, "Save some big words for our ground crews. They have gone through strafings, dodged bombs, and have always been out there working on our planes at all hours."

On 4 July 1942, the American Volunteer Group was officially disbanded. Reconstituted as the China Air Task Force of the US Army Air Forces, the squadrons later joined the 23rd Fighter Group of the Fourteenth Air Force, which subsequently adopted the nickname of the Flying Tigers. Five veteran AVG pilots, including Tex Hill, remained with the 23rd Fighter Group to train new pilots.

Meanwhile, in April 1942, Claire Chennault returned to the Army Air Forces with the rank of colonel, commanding the China Air Task Force. His weathered face made the cover of the 10 August 1942, issue of Life magazine. Even though the Flying Tigers had ceased to exist as an independent fighting force a month earlier, their exploits remained popular with the media.

In March 1943, Chennault was promoted to the rank of major general and given command of the Fourteenth Air Force, a post that he held until August 1945. He retired that October and died in Washington, DC, at the age of 67 on 27 July 1958.

The legacy of the Flying Tigers is one of grit, determination, and bravery against overwhelming odds. Surely this handful of American pilots should continue to capture the imagination today not solely because they dared to take on the Japanese – but also because they consistently bested their enemy in the air.

TIGER ROLL CALL

A number of Flying Tiger pilots achieved success during and after their days with the famous fighter group

BRIGADIER GENERAL DAVID LEE 'TEX' HILL

Tex Hill served as both a flight and squadron commander with the Panda Bears and remained in China to train pilots and lead the 23rd Fighter Group of the US Army Air Forces, ending the war with 15.25 aerial victories. After World War II, Hill engaged in mining, ranching, and oil speculation. He remained in the Army Reserve and in 1946 became the commander of the newly formed Texas Air National Guard. Promoted to brigadier general at the age of 31, he was the youngest general officer in the history of the Air National Guard. Hill retired from duty in 1968 and became a frequent guest at air shows and events commemorating the Flying Tigers around the world. In 2002, he received the Distinguished Service Cross for valour, 60 years after the engagement for which he was being recognised. Hill died at his home in Texas in 2007. He was 92 years old.

COLONEL ED RECTOR

Ed Rector was serving as a naval aviator, flying from the aircraft carrier USS Ranger, when he resigned his commission to join the American Volunteer Group. Rector scored the Flying Tigers' first aerial victory against the Japanese in combat above the Chinese city of Kunming on 20 December 1941. He was the second-highest scoring ace of the AVG with 10.5 kills and went on to command the 76th Fighter Squadron of the 23rd Fighter Group, shooting down two enemy fighters on 25 September 1942. As commander of the 23rd Fighter Group, he recorded his last kill, and reportedly the last for the unit, on 2 April 1945. Rector remained in China after the war, serving as a military advisor. He retired from the US Air Force in 1962 and worked as an aviation consultant in numerous countries. He died on 26 April 2001 at the age of 84.

> "RECTOR SCORED THE FLYING TIGERS' FIRST AERIAL VICTORY AGAINST THE JAPANESE IN COMBAT ABOVE THE CHINESE CITY OF KUNMING ON 20 DECEMBER 1941"

COLONEL GREGORY 'PAPPY' BOYINGTON

The best known of the Flying Tigers, Colonel Gregory Boyington, served as a flight leader with the AVG and was credited with two Japanese planes. Originally a Marine pilot, Boyington rejoined the Corps in September 1942 and became famous commanding Fighter Squadron 214 (VMF-214), the 'Black Sheep', in the Solomons. At 31, Boyington was older than the other pilots. They called him 'Pappy'.

Boyington became the top Marine ace of World War II with 28 victories. He received the Medal of Honor for an engagement in which 24 Corsairs shot down 20 enemy fighters with no losses. On 3 January 1944, Boyington had just flamed his 28th enemy plane when he was shot down. He spent 20 months in a prison camp. Boyington retired from the Marines in 1947 and worked at various jobs. The television series Baa Baa Black Sheep, more fiction than fact, brought notoriety. He died at the age of 75 on 11 January 1988.

LIEUTENANT COLONEL CHARLES OLDER

A leading AVG ace, Charles Older entered flight training with the US Marine Corps after graduating from college in 1939. He resigned to join the AVG in the summer of 1941 and participated in aerial engagements above Rangoon, Burma, in December.

Flying with the 3rd Squadron, Hell's Angels, Older completed his AVG tour with ten victories. Returning to the US in the summer of 1942, he joined the US Army Air Forces. He later served in China as operations officer and deputy commander of the 23rd Fighter Group. At the end of World War II, he had tallied 18 kills.

After the war ended, Older graduated with a law degree from the University of Southern California. In 1967, Governor Ronald Reagan appointed him to Superior Court in Los Angeles. Judge Older presided over the trial of notorious murderer Charles Manson. He died at his home in Los Angeles on 17 June 2006 at the age of 88.

> "FLYING WITH THE 3RD SQUADRON, HELL'S ANGELS, OLDER COMPLETED HIS AVG TOUR WITH TEN VICTORIES"

MAJOR GENERAL CHARLES BOND

A US Army Air Forces pilot, Charles Bond, resigned his commission, arriving in Burma on 12 November 1941, to join the Flying Tigers. He was credited with seven aerial victories and was shot down twice. Some historians credit Bond as the first Flying Tiger to paint the famous shark mouth on his P-40 fighter.

In October 1942, Bond rejoined the Army Air Forces, serving as the pilot for W Averell Harriman, US Ambassador to the Soviet Union. After World War II, he worked as a commercial pilot before returning to the military. In the 1950s, he commanded the 25th and 28th Air Divisions. During the Vietnam War, he led the 2nd Air Division and the 12th and 13th Air Forces.

Bond retired in 1968. In 1984, his book, A Flying Tiger's Diary, became a bestseller. Bond served as a consultant for Texas Instruments and died on 18 August 2009, at the age of 94.

LIEUTENANT COLONEL ROBERT T SMITH

Robert T Smith was an early Flying Tiger commitment, resigning from the US Army Air Forces in July 1941. He flew his first combat mission on 23 December, shooting down a Japanese bomber while sharing credit for another. On Christmas Day 1941, Smith shot down three enemy planes. He became flight leader in the AVG's 3rd Squadron, the Hell's Angels. When the AVG was disbanded, he had tallied 8.9 aerial victories.

Soon Smith returned to the Army Air Forces. He commanded the 337th Fighter Squadron, the 329th Fighter Group, and the 1st Air Commando Group, leading medium bombers and flying fighter escort missions.

After retiring from the military, Smith flew as a commercial pilot, wrote radio scripts, and worked for the Flying Tiger Line, the first air cargo company in the US. He published a book, Tale of the Tiger, based on his diaries. Smith died on 21 August 1995, at the age of 77.

> “19 FLYING TIGER PILOTS WERE OFFICIALLY CREDITED WITH FIVE OR MORE CONFIRMED AERIAL VICTORIES DURING THEIR COMBAT TOURS WITH THE AVG, ACHIEVING ACE STATUS”

American Volunteer Group pilots make their way to their planes after an air raid siren sounds

Images: Alamy, Mary Evans, Getty, Rex Features

A Flying Tiger veteran photographed in front of an image of his comrades, at Kunming Museum, China

ODETTE SANSOM: SURVIVING THE NAZIS

An operative of the Special Operations Executive in France, Odette Sansom was captured by the Nazis – but made it out alive

WORDS **BEN GAZUR**

Odette Marie Céline Brailly was born in Amiens, France in 1912. Her early life was marked by tragedy and illness – her father died in the First World War and she was afflicted by a sickness that left her blind for three years. In 1931, Odette married a British man named Roy Sansom and relocated to England.

When war broke out, Odette moved with her children to the countryside. Being safe away from the bigger cities left Sansom feeling guilty, however, as her brother and mother were stuck in occupied France. When the Admiralty asked for any postcards or photos of the French coast to aid with invasion plans, Sansom accidentally sent a letter offering her help to the War Office. They soon recruited her to the Special Operations Executive and she was sent to France.

Landing in 1942, Sansom was able to make contact with the French Resistance. She found that security among the network she worked with was lacking but she continued to act as a courier despite the great risks involved.

Sansom was captured by the Nazis having been contacted by a German spy-catcher called Hugo Bleicher, acting under the guise of a German officer sympathetic to the Allies. Taken to a prison near Paris, Sansom was interrogated multiple times and tortured in sadistic ways. She refused to give up any of her fellow Resistance operatives despite being burned with a red-hot poker and having her nails pulled out.

The only thing she did reveal was that the man she was captured with, Peter Churchill, was related to the British prime minister and that she was married to him. Neither of these things was true but they hoped a supposed link to Winston Churchill might ease their suffering.

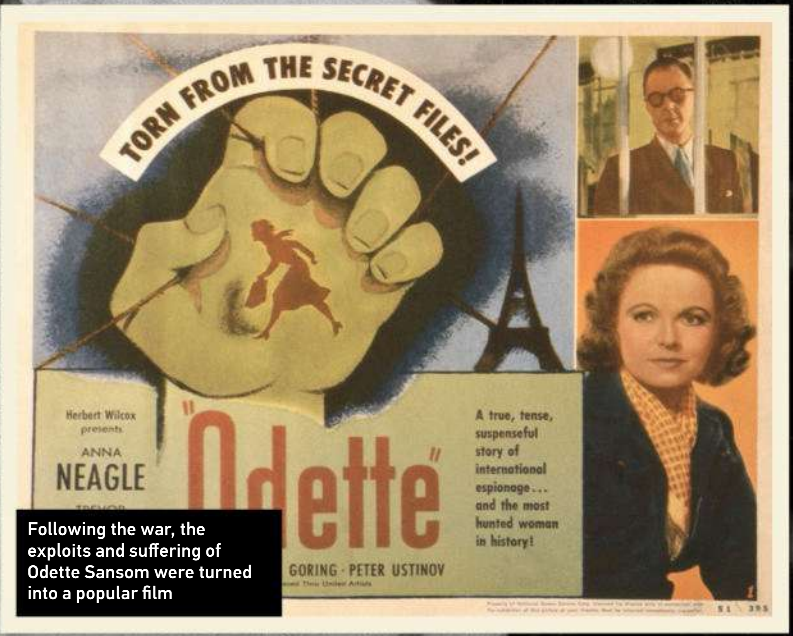
Sansom was sent to Ravensbruck concentration camp in 1943 where she was held in a punishment block and starved. At the end of 1944, she was moved to a cell near the ovens used to cremate the dead and observed many of the horrors of the camp. Only when Allied troops approached the camp was she removed by the camp commandant, who hoped her link to Winston Churchill would save his life. He was mistaken. After the war, Sansom testified against him and he was executed.

After the war, Sansom found fame when she published a book of her exploits that was turned into a film. She is the only woman to have been awarded the George Cross while still alive and she was made a Chevalier of the Legion d'Honneur.

Odette Sansom was awarded the George Cross for her bravery in the face of the brutal interrogation she received at the hands of the Gestapo

FOR GALLANTRY

Odette Sansom had not intended to go to war when she contacted the War Office but bravely entered occupied France when asked to serve


TORN FROM THE SECRET FILES!
Herbert Wilcox presents
ANNA NEAGLE
"Odette"
A true, tense, suspenseful story of international espionage... and the most hunted woman in history!
GORING · PETER USTINOV

Following the war, the exploits and suffering of Odette Sansom were turned into a popular film

Image: Getty Images, Wikimedia Commons

SPIES THAT WON WWII

These are the spies, secret agents, codebreakers and saboteurs – Britain's secret army who fought in the shadows in a bid to cripple Nazi Germany

Following the disaster that unfolded during the Battle of France, Britain found itself standing alone in the world; the only major power standing between Hitler and the conquest of Western Europe. With his army shattered and the threat of invasion a near certainty, Churchill needed a plan to take control of the dire situation. So he turned to his secret services, and the newly formed Special Operations Executive, to carry the war back to Hitler. A unique group of secret agents, overseas guerrilla fighters, code-breaking boffins and specially trained saboteurs would work tirelessly to turn the tide of conflict in the Allies' favour.

Here we choose 20 of the most notable agents and reveal their stories. Most worked to bring down tyranny. Some chose to support it. Many sacrificed their lives. Whatever their role, their exploits stand as some of most intriguing tales from World War II…

> **"MOST WORKED TO BRING DOWN TYRANNY. SOME CHOSE TO SUPPORT IT. MANY SACRIFICED THEIR LIVES"**

KEY TRAIT

MASTERMIND
ASSASSIN
SABOTEUR
CODEBREAKER
DOUBLE AGENT
SMOOTH TALKER

IAN FLEMING

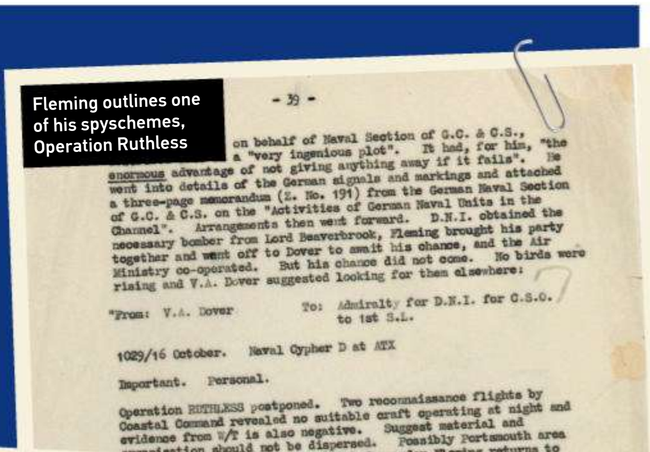
The James Bond creator enjoyed a distinguished career in military intelligence

As a journalist, Ian Fleming journeyed to Russia in 1939 to report on a trade deal, although his real mission was to ascertain Russia's military strength and morale ahead of what looked like certain war. When Britain did finally enter the conflict, Fleming was appointed as assistant to Rear-Admiral John Godfrey, the director of Naval Intelligence, and took up the position of lieutenant in the Special Branch of the Royal Naval Volunteer Reserve, a rank he was later to bestow on his famous literary creation, super spy James Bond.

Fleming helped develop ties between the UK and US over the running of secret agents and was heavily involved in the formation of the 30 Assault Unit, a British commando group designed to support troops and glean vital information for the war effort. Among their greatest achievements were the capture of an Enigma machine — the key piece of German encryption equipment — and the seizure of the complete records of the German navy.

He is also widely credited as the author of the Trout Memo, which culminated in Operation Mincemeat, a deception to disguise the 1943 Allied invasion of Sicily. Mincemeat saw the body of a dead tramp dressed as a British officer, supplied with false papers, and dumped off the coast of Spain. It was washed up and intercepted by German agents.

Fleming's knowledge of secret operations found voice in the creation of the most famous fictional spy of all time, James Bond, who he cast as the hero of his 1953 novel *Casino Royale*. Fleming wrote a further 13 Bond books. The hero's name was taken from an ornithologist, though the likes of M and Q branch were drawn from his experiences in British intelligence. It is thought that the character of M was based on Fleming's boss, Rear-Admiral Godfrey.


Fleming outlines one of his spyschemes, Operation Ruthless

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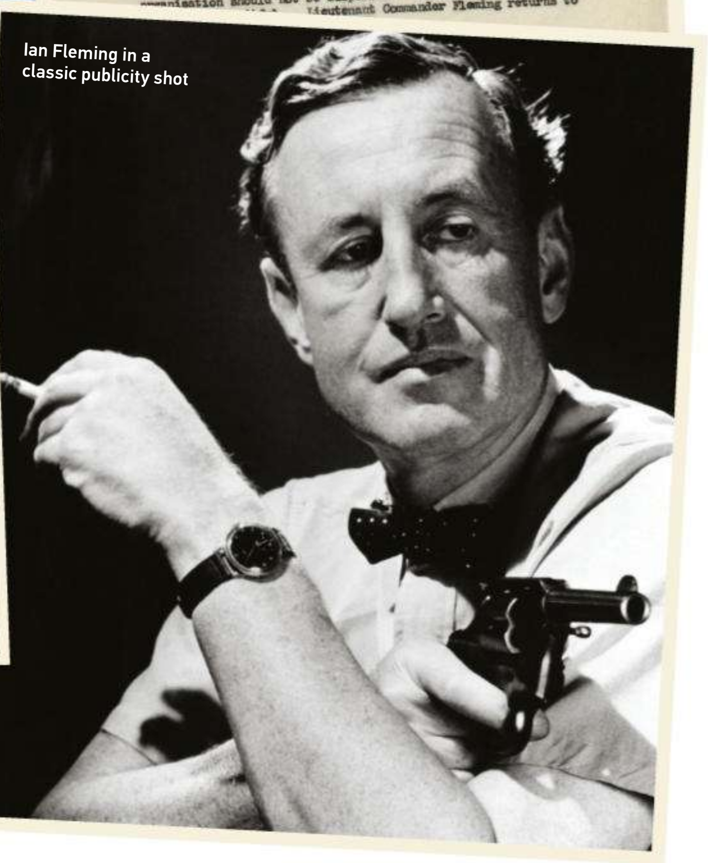
on behalf of Naval Section of G.C. & C.S.,
a "very ingenious plot". It had, for him, "the
enormous advantage of not giving anything away if it fails". He
went into details of the German signals and markings and attached
a three-page memorandum (Z. No. 191) from the German Naval Section
of G.C. & C.S. on the "Activities of German Naval Units in the
Channel". Arrangements then went forward. D.N.I. obtained the
necessary bomber from Lord Beaverbrook, Fleming brought his party
together and went off to Dover to await his chance, and the Air
Ministry co-operated. But his chance did not come. No birds were
rising and V.A. Dover suggested looking for them elsewhere:

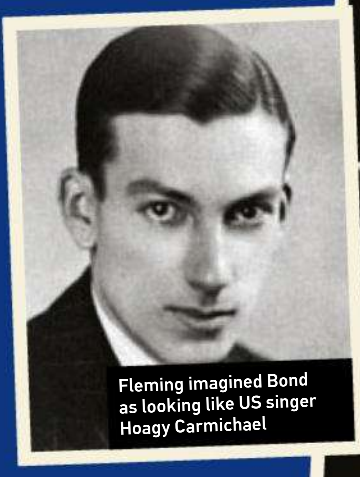
"From: V.A. Dover To: Admiralty for D.N.I. for C.S.O.
to 1st S.L.

1029/16 October. Naval Cypher D at ATX

Important. Personal.

Operation RUTHLESS postponed. Two reconnaissance flights by
Coastal Command revealed no suitable craft operating at night and
evidence from W/T is also negative. Suggest material and
organisation should not be dispersed. Possibly Portsmouth area
Lieutenant Commander Fleming returns to


Ian Fleming in a classic publicity shot


Fleming imagined Bond as looking like US singer Hoagy Carmichael

ROGER LANDES

The betrayed agent who got his revenge

After working with Claude de Baissac, Roger Landes took over the Scientist network, though was forced to escape into Spain when betrayed by French Resistance leader André Grandclement. In the UK he was suspected of being a turncoat, though was found innocent and returned to France to help rebuild the network ahead of the D-Day operations. Once on the ground the Resistance leaders dispatched Grandclement and Landes was lumbered with the unenviable job of killing Grandclement's wife.

'TOMMY' YEO-THOMAS

The super-spy who inspired James Bond

Yeo-Thomas, who was code-named White Rabbit by the Gestapo, was parachuted into France three times before eventually being captured and tortured. He was taken to Buchenwald concentration camp but managed to escape. Once, while on a train in France, he engaged in conversation with Klaus Barbie, the notorious Nazi known as the 'Butcher of Lyon'. Like Bond, he is said to have employed a number of techniques to escape his enemies — including jumping from a train, strangling a guard, wearing disguises and riding in a hearse — and is also said to have been a hit with women. He went on to win the George Cross.

LEO MARKS

The SEO's chief cryptographer

Conscripted in January 1942, Marks trained as a cryptographer and went on to join the SOE (Special Operations Executive), rather than joining colleagues at Bletchley Park. He briefed a clutch of SOE agents sent into occupied Europe, including Noor Inayat-Khan as well as the Grouse/Swallow team of saboteurs sent to destroy Hitler's heavy water facility in Norway. Marks recognised that there were some serious defects in the existing cipher system and so set about working with agents on memorising unpublished and memorable poems. He was also credited with reinventing the one-time pad, whereby agent and home office held the only two copies of pads of random letters used to communicate, which the agent destroyed after its initial use.

FRANCIS SUTTILL

The network mastermind betrayed at the last minute

Francis Suttill was chosen to establish and run the Prosper network based in Paris and his list of successful missions included the sabotage of the Chaingy power station, the destruction of 1,000 litres of petrol and a clutch of attacks on goods trains running the Orleans-Paris line. He also founded a safe house at the School of National Agriculture at Grignon, which has been cited as one of the most important SOE houses in France. The collapse of the Prosper network was a tragedy in which hundreds of SOE agents and Resistance fighters were swiftly betrayed and captured.

JOZEF GABČÍK & JAN KUBIŠ

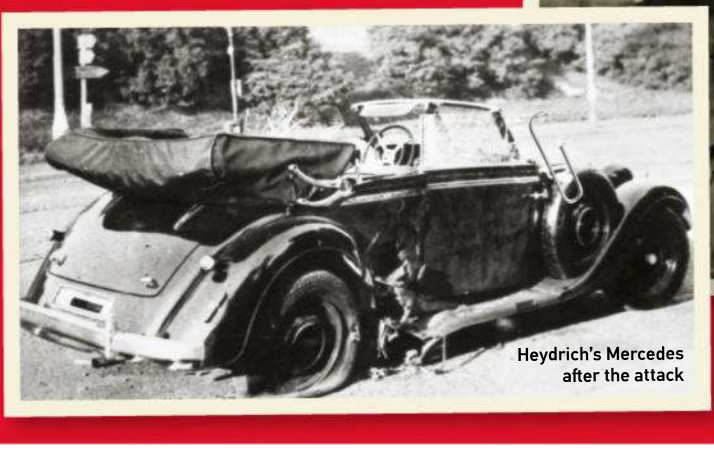
The Czech soldiers who gave their life in Operation Anthropoid

These two soldiers in the Czechoslovak army-in-exile worked under SOE instruction in Operation Anthropoid, which led to the assassination of SS Obergruppenführer Reinhard Heydrich in Prague during May 1942. The mission was the only successful assassination of a senior Nazi officer during World War II, although it proved a pyrrhic victory, prompting terrible SS reprisals conducted against civilians in the region.

Jozef Gabčík and Jan Kubiš were among a number of troops parachuted into Czechoslovakia. They met with anti-Nazi sympathisers and, after planning and aborting a number of assassination missions, settled on an ambush of Heydrich's car. On the morning of 27 May, as Heydrich approached, Gabčík stepped in front of the car and opened fire with his British-issued Sten sub-machine gun, which jammed, allowing Heydrich to return fire with his pistol. Kubiš then launched an explosive at the car, fragments of which ripped through the bumper, embedding shrapnel in Heydrich's left-hand side. The gunfight continued before Gabčík and Kubiš made their escape.

The assassins presumed their attack had failed. Heydrich, however, succumbed to his wounds and died on 4th June. Hitler was absolutely furious at what had happened, and ordered immediate reprisals, which included the Lidice Massacre where a whole village was destroyed. Despite their brutal retaliation, the Nazis were unable to find the perpetrators until resistance fighter Karel Čurda turned himself in to the Gestapo and betrayed the team's local contacts. Following a vicious manhunt characterised by brutal Gestapo interrogation techniques, Kubiš, Gabčík and the other parachutists were eventually besieged in the Sts. Cyril and Methodius Cathedral in Prague. Here they died, either during the ferocious gunfight or via suicide as the Nazis closed in.

Jan Kubiš, whose explosive went on to kill Heydrich



Heydrich's Mercedes after the attack

AGENCY WORK

Discover the dizzying array of British intelligence organisations

MI9: Responsible for the interrogation of enemy prisoners of war until 1941, MI9 also assisted in the escape and evasion of Allied prisoners and the debriefing of those who successfully reached England. Further, MI9 communicated with prisoners who were still in captivity, sending them instructions and equipment through clandestine sources.

MI6: Also known as the Secret Intelligence Service (SIS), MI6 serves to this day as the primary foreign intelligence agency of the British government. During World War II, MI6 established covert operations offices in the United States, Canada, and elsewhere, conducting successful operations in all theatres of the conflict.

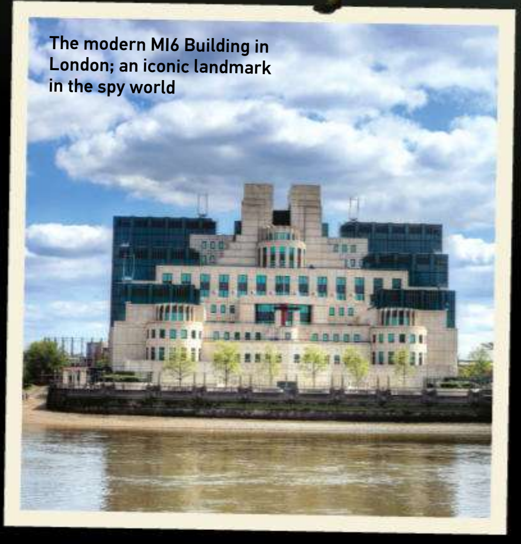
MI8: Serving as the signals intelligence section of the War Office, it was the responsibility of MI8 to establish and manage a worldwide network of radio transmission posts referred to as the 'Y Stations'. MI8 was responsible for communications security and for the Radio Security Service (RSS) for 18 months during 1939-1941, prior to the absorption of the RSS by MI6.

MI7: The genesis of British press and propaganda management occurred with MI7. At the outbreak of World War II, the section was reconstituted with primarily civilian personnel working as censors and propagandists. In the spring of 1940, most of the functions of MI7 were transferred to the British Ministry of Information.

MI5: Also called the Security Service, MI5 served as the domestic counterintelligence and security section of British Intelligence. During World War II, MI5, which remains active today, developed and administered the XX (Double-Cross) double agent programme and controlled the entry of foreign nationals to Britain through the London Reception Centre at the Royal Patriotic School.

MI10: Responsible for the analysis of various types of technical intelligence across the globe during World War II, MI10 regularly conducted evaluations of captured enemy weapons and a wide range of emerging technology as it was brought to Britain from the field. MI10 was eventually merged into the Government Communications Headquarters.

Naval Intelligence Division: Also known as Room 39, the Naval Intelligence Division (NID) was created in 1912. During World War II, NID handled naval Ultra transmission decrypts and fielded information-gathering operatives with its Commando 30 Assault Unit. NID officers were active in British warzones across the world and were present at Operations Torch and Overlord.


The modern MI6 Building in London; an iconic landmark in the spy world

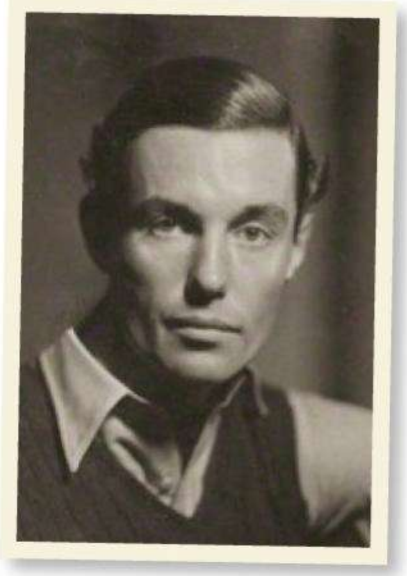
PETER FLEMING

The dashing writer and adventurer was a prime mover during the secret war in the East

The elder brother of Ian, the effortlessly glamorous Peter Fleming became a prominent figure in British intelligence, working with Colin Gubbins on the formation of the Auxiliary Units, who would fight a resistance war in the UK should the Germans complete a successful invasion. When Gubbins left to form the SOE, he took Fleming with him.

In April 1941, armed with a ton of explosives, £40,000 in notes and gold sovereigns and Italian pocket dictionaries, Fleming and a team of agents entered Northern Greece. They held a key valley in Macedonia, the Monastir Gap, against the might of the German army, before withdrawing and playing havoc with enemy communications, blowing up bridges and railways as they went. Fleming and his men also helped evacuate the British Vice Consul and diplomatic staff to Cairo.

His abilities saw him transferred to India and then Ceylon to head up D Division in charge of military deception operations in Southeast Asia. He played a prominent role in the British invasion of Burma – a territory that had been lost during the Japanese invasion of 1942 – planting information that claimed British forces in the region were much larger than they really were. In June 1945 his efforts were rewarded with an OBE.



NOOR INAYAT KHAN

A courageous spy princess whose life ended in tragedy

Descended from Tipu Sultan, an 18th-century ruler of Mysore, Inayat Khan joined the Women's Auxiliary Air Force — taking the name Nora Baker — before entering the SOE in February 1943. Despite reservations about her suitability for a secret agency role, she became the first female wireless operator sent to France and survived the collapse of the Prosper network.

Though ordered to leave by Colonel Maurice Buckmaster, head of SOE's French operations, she bravely stayed on and, with all the Prospect leaders in captivity, became the single most important SOE asset in the entire region as she continued to transmit information back to England. Unfortunately, in October 1943 the Gestapo captured her after she was betrayed by a double agent. She twice escaped her captors only to be retaken immediately, and when she was transferred to a prison at Pforzheim she is said to have been perpetually chained in a crouching position.

She was moved to the death camp at Dachau and executed in July 1944. An unnamed guard gave a description of the death of a woman who is thought to be Inayat Khan, and its content is extremely upsetting. She was awarded the George Cross in 1949.

ALAN TURING

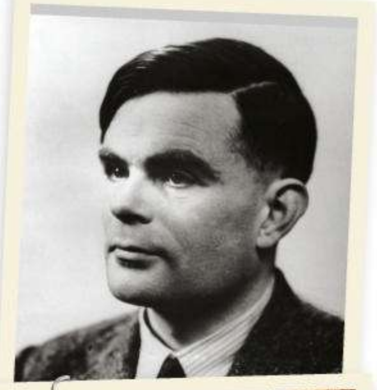
The mathematical genius who helped crack the Enigma code

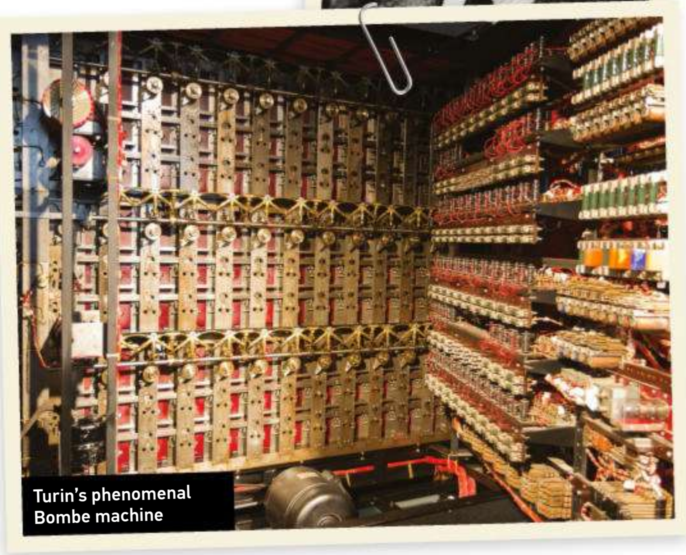
Alan Turing was a brilliant mathematician born in London. He studied at both Cambridge and Princeton universities before going on to work for the British Code and Cypher School even before WWII. Once war was declared, Turing took up a full-time role at Bletchley Park in Buckinghamshire where he worked diligently to decipher the military codes used by Germany and its allies, his primary efforts aimed at cracking the Enigma code.

The Enigma was the German armed forces' enciphering machine used to send messages securely. Polish mathematicians had cracked the original codes but the Germans increased Enigma security by changing the cipher system on a daily basis. Along with fellow code-breaker Gordon Welchman, Turing developed a machine known as the Bombe, which replicated the action of several Enigma machines wired together and significantly reduced the work of the code-breakers. From mid-1940, the team at Bletchley Park was regularly reading German Air Force signals.

It was a different matter in the Battle of the Atlantic, however, a crucial theatre of conflict. Here, given the German Navy's greater cipher discipline, messages relayed back and forth between the Kriegsmarine and German U-boats had flummoxed the code-breakers at Bletchley. The Allies struck gold, however, with the capture of U-110, which provided them with an intact naval Enigma machine. This was soon dispatched to Turing and the other boffins at Bletchley who got to work. Their efforts were further boosted by the fact that the German high command believed the codes used in the naval communication were inviolable, and soon the Allied convoys were perpetually dodging the U-boat wolfpacks.

The Germans' inclusion of a fourth rotor in the Enigma was a setback, and the U-boats once again enjoyed a 'happy time' during 1942 when they terrorised the Atlantic convoys. Turing, however, eventually cracked this problem, too. The battle to break German ciphers was perennial and Turing proved a key asset for the Allies. His work was memorialised in the 2014 historical drama film *The Imitation Game*.





Turin's phenomenal Bombe machine

TOR GLAD

Norwegian worked as a double agent in tandem with John Moe

Tor Glad, a Norwegian citizen, came ashore in Scotland with John Moe and turned double agent under the MI5 XX programme. Glad participated in staged sabotage operations and transmitted false radio broadcasts that convinced the Germans that the Allies planned to invade Norway prior to the actual invasion of North Africa in 1942. The Germans were compelled to station more than 300,000 troops in Norway to defend against an invasion that never came. Moe and Glad were nicknamed Mutt and Jeff for their resemblance to popular cartoon characters of the period. British handlers came to doubt Glad's continuing value and eventually interned him in 1943.

ROMAN CZERNIAWSKI

Polish double agent fed false D-Day information to the Germans

Once associated with French double agent Mathilde Carré in the failed Interallie Resistance network, Czerniawski escaped to Britain and was heavily scrutinised by Polish Intelligence. Both MI6 and MI5 questioned him, and the British turned him under the MI5 XX programme. With the code name 'Brutus', Czerniawski passed false information to the Germans; however, his strong anti-Soviet sentiment concerned the British that German authorities had become suspicious. But by the end of 1943, the British deemed Czerniawski safely operational. He then transmitted false information prior to D-Day under Operation Fortitude, helping convince the Germans that the invasion of Europe would take place in the Pas-de-Calais.

JUAN PUJOL GARCÍA

Catalan double agent played a pivotal role in D-Day deceptions

Juan Pujol García, code-named Garbo, offered his services to German intelligence before joining the British and working with MI6 as a double agent. Together with Tommy Harris, he created a network of 27 imaginary sub-agents through whom he provided misinformation to the Germans during Operation Fortitude, which aimed to disguise the location of the D-Day landings. In one key transmission, Pujol deceived the Germans so completely that they kept two armoured divisions and 19 infantry divisions in the Pas-de-Calais in anticipation of an invasion. This gave the Allies time to establish their bridgehead. He was awarded both the Iron Cross and an MBE.

CLAUDE DE BAISSAC

A key player in France's Scientist network

Mauritian Claude de Baissac, the brother of fellow SOE operative Lise de Baissac, parachuted into France on 30th July 1942 with Harry Peulevé and helped form the Scientist network in the Bordeaux area. Among their operations they attacked the local U-boat pens. During the assault phase of Operation Overlord in early June 1944, the head of SOE operations in France sent De Baissac back to the Normandy region to re-found Scientist and he worked on the army's flanks providing tactical intelligence. His bravado is recorded in one episode where he received an SAS captain on the upper storey of a house that had a German HQ on the ground floor.

NANCY GRACE AUGUSTA WAKE

Her life in jeopardy, the Nazis' most wanted agent survived the war

The most decorated female in Allied service during World War II, Nancy Wake was continually in danger in Nazi-occupied France. Undeterred, she risked her life initially as a courier for the French Resistance. She remained elusive, the Gestapo deeming her its most wanted enemy spy, nicknaming her the 'White Mouse', and placing a bounty of 5 million francs on her head.

Wake's determination to thwart the Nazis grew from first-hand experience. Born in New Zealand, she moved with her family to Australia, ran away from home at 16, and made her way to New York City and London. She worked briefly as a nurse while learning the craft of journalism. During the 1930s she took a job as a European correspondent with Hearst Newspapers, witnessing the brutality of the Nazi rise to power.

With the outbreak of World War II, Nancy joined the French Resistance. When the network she served was compromised, she was arrested but released when the Germans believed a friend's concocted story of the supposed infidelity of her husband, Henri Fiocca. After several attempts, she reached London and volunteered for the SOE. Fiocca chose to remain in France. He fell into the hands of the Gestapo and was tortured to death without revealing Nancy's whereabouts.

On the night of 29th April 1944, Wake parachuted into France and joined the band of Maquis fighters led by Captain Henri Tardivat in the Troncais Forest. She trained Maquis recruits and once rode a bicycle more than 500 kilometres to deliver a top-secret codebook. During one raid she silenced a German sentry, delivering a fatal judo chop with her bare hands.

Wake survived the war, receiving the George Medal, The US Medal of Freedom, the French Croix de Guerre, and other decorations for valour. She died in London in 2011 at age 98.

Nancy was given many awards

Nancy was determined to have a role in the war

"SHE ONCE RODE A BICYCLE MORE THAN 500KM TO DELIVER A NOTEBOOK"

MERLIN MINSHALL

Serving with Ian Fleming in Naval Intelligence brought new adventure

Merlin Minshall was an adventurer. After graduating from London University, he set out in 1931 to become the first Englishman to sail across Europe to the Black Sea. An avid auto racer, he won the Italian Foreign Challenge in 1937 where Fascist dictator Benito Mussolini presented the trophy. Minshall later became first to drive an auto with an air-cooled engine across the Sahara.

With the outbreak of war in 1939, Minshall reported for duty with the Royal Navy Volunteer Reserve where he served under Ian Fleming for a time. In 1940, he participated in a failed plan to block the Danube River with barges to impede the flow of oil to Germany and led Operation Shamrock, a joint Naval Intelligence-SOE mission monitoring German U-boat traffic along coastal France. In 1941, he assisted the hunt for the German battleship Bismarck while commanding a section at HMS Flowerdown, a Sussex wireless station, and served in the Pacific.

Minshall initially denied that Fleming had modelled James Bond after him but later went on to embrace the idea. Married four times, Minshall died aged 80 in 1987.

JOHN MOE

Dual citizen of Britain and Norway fed false information to the Nazis

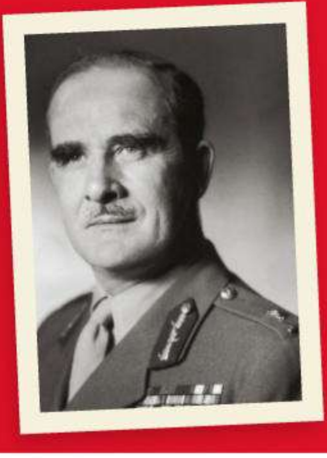
Along with his companion Tor Glad, John Moe landed at Crovie on Scotland's Moray Firth, on 7th April 1941. The duo had been recruited by the German Abwehr to operate in Britain and commit acts of sabotage; however, they immediately approached local authorities and were interrogated by MI5 and MI6. Both were turned under the MI5 XX programme as double agents, committing staged acts of sabotage against worthless targets with explosives supplied by the Germans. Nicknamed Mutt and Jeff, they fed false information to the Abwehr through the radio before the Allied invasion of North Africa, prompting Germany to keep thousands of troops in Scandinavia.

Double agents Moe and Glad helped to divert thousands of Nazis away from the fight

COLIN GUBBINS

The disciplined and dapper Scotsman who headed up the Special Operations Executive

The prime mover in the Special Operations Executive (SOE), this energetic Scotsman served with distinction in the Royal Artillery during WWI before going on to fight in Russia for the White Army and then to Ireland, where he fought in the Anglo-Irish War of 1919-21. His experiences in these two arenas gave him a keen insight into guerrilla warfare and he went on to author a number of training manuals, such as 1939's Partisan Leader's Handbook, which outlined the principles of sabotage and guerrilla warfare, for British Military Intelligence.



He worked on establishing the Auxiliary Units, who would fight a resistance war in the UK should the Germans complete a successful invasion, before he was invited to oversee the SOE. He took the codename M (a moniker borrowed by Fleming when he wrote his James Bond novels). Under his guidance, SOE formed separate sections to co-ordinate activities in specific countries, with the greatest concentration focusing on France. The SOE enjoyed many successes and endured many failures, including a disastrous campaign in the Netherlands that ended up costing many agents' lives.

As the head of SOE, Gubbins co-ordinated the activities of resistance movements across the globe and Gubbins consulted with the Foreign Office, the chiefs of staff, representatives of the resistance organisations, governments-in-exile, and other agencies including his counterparts in the American Office of Strategic Services (OSS).

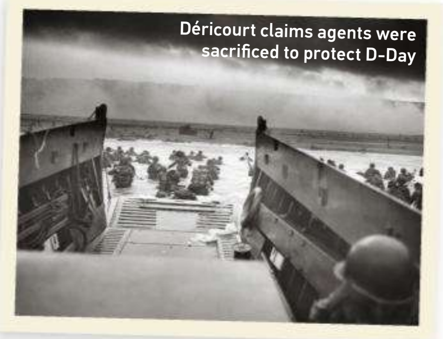
HENRI DÉRICOURT

The inscrutable Frenchman's history remains a mystery to this day

After escaping to Britain in August 1942, Frenchman Henri Déricourt joined the SOE and was parachuted back into his native land in January of the following year. He worked mainly for the Prosper network and arranged the transportation of over 60 SOE agents including Noor Inayat Khan, Vera Leigh, Yolande Beekman, Eliane Plewman, Diana Rowden, Jack Agazarian, Francis Suttill, Pearl Witherington and Lise de Baissac.

When the Prosper network was compromised, the likes of Agazarian and Suttill believed Déricourt might have been working against them as a double agent. In the aftermath of WWII, evidence emerged that Déricourt was guilty of providing information to the Gestapo that led to the arrest and execution of several agents including Inayat Khan, Agazarian and Suttill, among others. When interviewed for the book Double Agent, Déricourt claimed that the SEO had used him as a triple agent. Aware that the Gestapo had compromised the Prosper network, he said, the SEO deliberately sacrificed key agents in a bid to divert Nazi attention from Operation Overlord and the D-Day landings in Normandy in Operation Neptune.

Déricourt was reportedly killed in an air crash over Laos in November 1962. His body was never found, however, and suggestions abound that his death was faked so that he might go and live a new life under an assumed name.



Déricourt claims agents were sacrificed to protect D-Day

EDDIE MYERS

Engineer who sabotaged the Gorgopotamos viaduct

Lieutenant-Colonel Eddie Myers was the commanding officer on Operation Harling, an SOE mission held in conjunction with Greek Resistance groups, which aimed to destroy the viaduct and thereby hamper Field Marshal Erwin Rommel's supply route to north Africa. The sabotage was a success and proved that guerrillas working in conjunction with Allied officers could achieve spectacular results in occupied Europe. Myers remained on the ground, building his own guerrilla network, whose further successes included the destruction of the Asopos viaduct.

JACK AGAZARIAN

The selfless spy who made the ultimate sacrifice

RAF officer Jack Agazarian more than proved his mettle when he decided to return to France for a second mission in July 1943, even though the Gestapo knew who he was from his time with the Physician network. His bravery was further amplified when he stood in for his commanding officer, Nicholas Bodington, at a meeting that they felt might end up being a trap. It was, and Agazarian was arrested and subsequently killed. His wife also worked for SOE's F Section.

VIOLETTE SZABO

The brave agent who avenged her husband

Born Violette Bushell, Szabo joined the SOE in July 1943 following the death of her husband, Etienne Szabo, at the great tank battle of El Alamein. Her first mission, which she completed, was to check whether one of the Prosper network sub-chains had been compromised. She was then parachuted back into France in early June 1944, just two days after D-Day with the intention of disrupting German communications.

Shortly after landing, when in the company of French Resistance fighter Jacques Dufour and Jean Bariaud, her car ran into a German roadblock and she and Dufour laid down covering fire while the unarmed Bariaud escaped. Szabo and Dufour retreated towards a wood, exchanging fire with pursuing enemy troops. Szabo had an ankle injury and in the chase it gave way, forcing her to a standstill. She continued the firefight in a bid to let Dufour get away. She was captured and taken to the Ravensbrück, a concentration camp for women. She was executed in February 1945.

Her bravery saw her become the second woman to win the George Cross, her citation stating that while she was brutally tortured, she never surrendered any significant information. Her exploits are remembered in the book and the 1958 film, *Carve Her Name With Pride*.

MARIAN REJEWSKI

The Polish mathematician who reconstructed the Enigma cipher machine

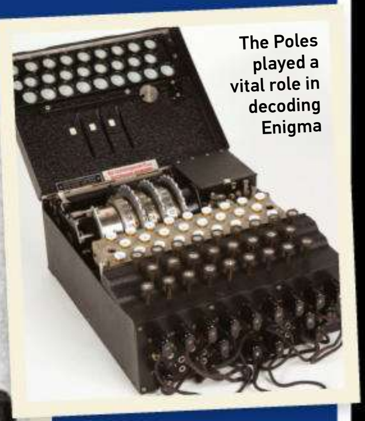
Significant early success in solving the cryptologic riddle of the German Enigma cipher machine was accomplished by a trio of Polish mathematicians in the 1930s. Marian Rejewski, Henryk Zygalski, and Jerzy Różycki collaborated in the effort, and Rejewski actually made an Enigma machine in 1932 without previously having seen one.

Rejewski was born in 1905 in Bromberg, at that time part of the German Empire. He attended Poznan University during the 1920s, and while Polish cryptanalysts had worked on Enigma for a time, their success had been limited. In the autumn of 1932, the task was handed to Rejewski.

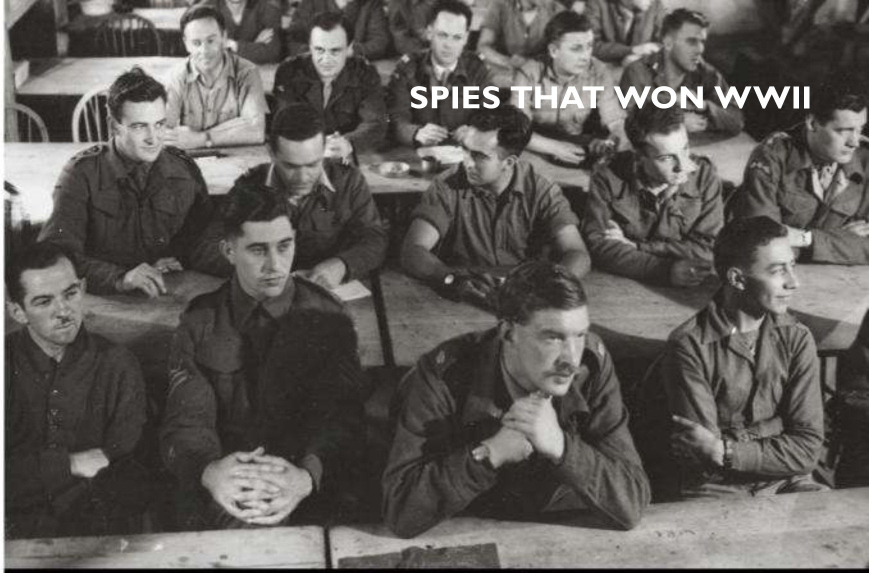
Rejewski had only a general understanding of how the machine's system of rotors functioned and received some assistance from French sources. Within just a matter of days, he managed to untangle the labyrinth of internal wiring that made the Enigma a revolutionary encoding machine with millions of possible letter combinations. The Poles subsequently went on to pioneer invaluable techniques for cracking Enigma decryptions. Weeks before the German invasion of Poland that started World War II, the Polish mathematicians met at Pyry, south of Warsaw, with British and French intelligence officers, revealing their successes. For British Intelligence, the progress of the Poles offered a great leap forward, allowing them to begin reading decrypted the Enigma messages, dubbed Ultra, within a matter of months.

The Poles continued working in France until late 1942. Rejewski and Zygalski escaped to England the following summer and were enlisted in the Polish Army, cracking other German codes.

Meanwhile, British and American cryptanalysts had taken the lead in the decryption of Enigma transmissions. The Poles, who had provided vital assistance, were excluded from further participation. Their role remained obscure for some time. Rejewski died in 1980, aged 78. Twenty years later, he was awarded the Grand Cross of the Order of Polonia Restituta, Poland's highest civilian decoration, for his work.


The Poles played a vital role in decoding Enigma

> **"REJEWSKI MADE AN ENIGMA MACHINE"**



SCHOOL FOR SCOUNDRELS

A step-by-step guide to the training of Special Operations Executive hopefuls

1. INTRODUCTORY COURSE

Those thought suitable for a role in the SOE were sent first on a two-three-week course, where they would engage in physical fitness exercises, basic map reading and weapons work, though the recruits were not told that they were testing for the SOE. There was also said to be a bar to see how potential agents might behave when alcohol was liberally poured.

2. GROUP A TRAINING

Those that passed the initial course were sent for a three-four-week course in paramilitary techniques in Scotland, most famously at Arisaig. They learned about small arms, and took lessons in unarmed combat (developed by former Shanghai police officers Sykes and Fairbairn), sabotage and demolition, intensive map reading and basic infantry tactical training.

3. GROUP B TRAINING

It was likely that the first two courses might wheedle out around 60 per cent of candidates, the remainder passing on to Group B training in the country houses around Beaulieu and the New Forest. Here they learned defensive lessons about enemy police services and how to respond to lines of questioning. They were also taught how to live their cover with conviction.

4. GROUP B TESTING

During the Group B work, recruits were also given lessons in intelligence gathering and reporting their findings back to England via elementary coding before they took a practical passing-out test that lasted several days. Recruits were sent off in small groups with a specific mission — sabotage, theft of a Sten gun etc — which might also require them picking up an accomplice.

5. PARACHUTE TRAINING

Once recruits graduated from Beaulieu they were sent for technical training, including parachuting for those to be dropped overseas. This was taught from a merchant's house near Manchester. Drops were made into Tatton Park from Whitley aircraft. The drop suits were developed with pockets for a spade, so the agents could bury the parachute on landing.

6. SPECIALIST TRAINING

There were a number of specialist courses for graduates, like the wireless school at Thame Park. There were courses in safe-breaking and clandestine printing as well as advanced sabotage techniques. Of those who failed the early courses, many were sent to the 'cooler' at Inverlair, where they were encouraged to forget what they'd learned about secret operations.

EINAR SKINNARLAND

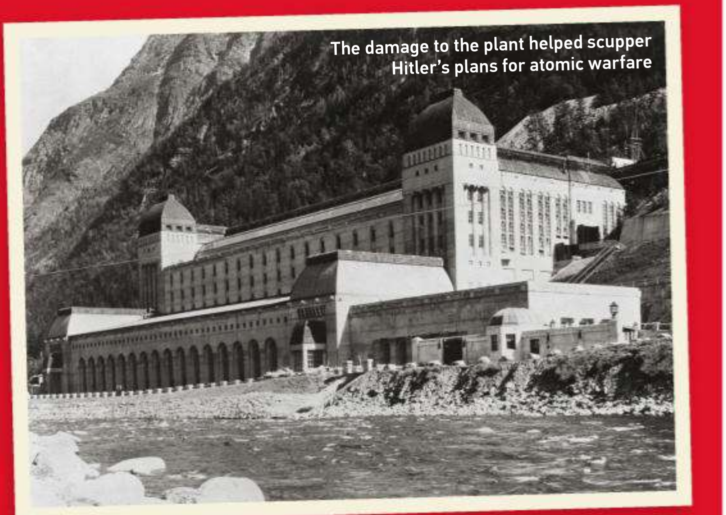
The Norwegian nationalist who helped thwart Hitler's atomic ambitions

When an SOE raiding party captured a Norwegian ship in March 1942, they discovered on board Einar Skinnarland, who was eager to help fight the German invaders in his homeland. He heralded from Rjukan, which was close to Vemok, home to Norsk Hydro, where the Germans were bidding to propel their atomic bomb development with the use of heavy water (deuterium oxide). A mission to destroy the plant passed to the SOE, who parachuted Skinnarland back into Norway, and there he befriended the chief engineer at the plant, learned plenty of information necessary for a coup de main operation, and relayed this by radio to the SOE.

On the ground, he then received a number of operatives who were to help with the landing of two British gliders carrying commando-engineers set to implement Operation Freshman. Sadly, both gliders crashed in bad weather and the survivors were captured, tortured and executed by the Gestapo. Security at the plant was beefed up.

Undeterred, Skinnarland and the SOE tried again and with Operation Gunnerside on 28/29th February 1943, they achieved their aim, Skinnarland helping commandos to sneak into the plant and set charges. The saboteurs only met one worker during the operation. He agreed to help, providing he was allowed to retrieve his eyeglasses! The explosion severely damaged the plant and wreaked havoc with Hitler's atomic ambitions. It is said that 3,000 German soldiers were dispatched to comb the area for the commandos, all of whom escaped, with four remaining in the region for further work with the Resistance.

The story was immortalised in the 1948 Franco-Norwegian film *Operation Swallow: The Battle For Heavy Water* and then the 1965 Kirk Douglas film *The Heroes Of Telemark*. Skinnarland continued to maintain radio contact between the local elements of the Norwegian resistance and SOE headquarters in London until the end of the war. He died in December 2002 in Toronto, Canada.


The damage to the plant helped scupper Hitler's plans for atomic warfare

A vial of deuterium oxide, a vital component of the Nazi's atomic bomb ambitions

HENRYK ZYGALSKI

The Polish cryptologist who helped crack Enigma

One of a trio of Polish mathematicians who performed early cryptanalytic work on Enigma encoded German ciphers, Zygalski developed perforated sheets, later known as 'Zygalski sheets,' as keys to a manual method of determining settings of Enigma machine rotors. In 1939, Zygalski participated in a pivotal meeting near Warsaw with representatives of the British and French intelligence communities, revealing the substantial progress the Poles had made in cracking Enigma. Along with fellow Pole Marian Rejewski, Zygalski reached England in the summer of 1943. He joined the Polish Army and worked on other ciphers but was excluded from further involvement in the Enigma project.

EDDIE CHAPMAN

The criminal turned agent who won the Iron Cross

Eddie Chapman's release from prison in Jersey saw him emerge into an occupied land and he immediately offered his services to the German secret service, the Abwehr. He agreed to sabotage the De Havilland factory but on his return to the UK turned himself in and worked as a double agent, code-named ZigZag. With help from MI5 he faked the bombing of the factory before returning to Germany and may have been the only British citizen to earn an Iron Cross.

KIM PHILBY

The most notorious member of the Cambridge Five

Britain ran an excellent double-cross network but was not immune from the same treatment. Appointed to MI6 in 1940 Philby passed more than 1,000 secret documents to the Soviet Union. Notorious for his actions after World War II, in a perverse way his perfidy helped secure the Allied war effort, convincing Stalin that Japan had no designs on the USSR and letting them concentrate their forces on the Eastern Front.

RONALD SETH

A double agent whose fantastic stories baffled friends and foes alike

After teaching in Tallinn, the capital of Estonia, Ronald Seth volunteered to join the SOE in a bid to stir up revolt against the Nazis in the Baltic States. He was codenamed Blunderhead and in October 1942, parachuted into Estonia. Nothing more was heard from him until the April of the following year when a file fell into Allied hands detailing the capture and interrogation of a British spy called Ronald Seth who had, apparently, revealed everything about his SOE training and mission. The SOE's signal office was ordered to desist from listening out for any further contact.

Not long after the liberation of Paris, however, a document was passed to the War Office purporting to be from Blunderhead. It outlined a fantastic tale, recording how his initial landing had dropped him amid a group of German soldiers, whom he'd fought off before executing a sabotage campaign while living off the land. He was eventually captured and tortured, he said, and claimed that he agreed to help the Germans against the Russians.

His report revealed how he had worked in Paris and undergone training with the German secret service, Abwehr, although when the enemy lost confidence with him he was sent to a POW camp to serve as an informer. He maintained that all the while he was still serving the SOE. The intrigue was enhanced when another letter appeared a short while later claiming that he was now operating in a POW camp at Limburg under the name of Captain John De Witt.

Finally, in April 1945 as the war was coming to an end, he walked into the British legation in Bern, and said that he was carrying peace proposals from Himmler and should therefore be flown home. MI5 interrogated him at length and were unable to unpick the fact from fiction. Whatever its veracity, Blunderhead's story remains one of the most fantastic ever linked to an SOE agent.

> "WHEN THE ENEMY LOST CONFIDENCE IN HIM HE WAS SENT TO A POW CAMP"

Ethnic Germans in Tallinn cheer the arrival of the Wehrmacht and the retreat of the Red Army

THE HIDDEN WORLD WAR

GERMANY

Abwehr: Formed in 1920 against the terms of the Versailles Treaty, the Abwehr evolved under the Nazis as the primary foreign and domestic intelligence of the German military high command before and during World War II.

RSHA: Controlled directly by Reichsführer Heinrich Himmler and the SS, the RSHA (Reich Main Security Office) ruthlessly pursued enemies of the Third Reich both in Germany and other occupied countries beginning in 1939.

UNITED STATES

Office of Strategic Services: Created by the United States in the spring of 1942, the charge of the Office of Strategic Services (OSS) was to conduct clandestine operations in foreign countries and behind enemy lines.

Federal Bureau of Investigation: A domestic law enforcement, security, and intelligence service of the US government, the Federal Bureau of Investigation (FBI) pursued espionage cases in the United States in addition to pursuing surveillance of suspicious individuals.

SOVIET UNION

NKVD: The Soviet People's Commissariat for Internal Affairs (NKVD) was formed in 1934. Before and during World War II the NKVD exercised broad power relating to state security both military and civilian.

SMERSH: Constituted in the spring of 1943, SMERSH served as the primary Soviet directorate of counterintelligence, whose aim was to root out enemy agents and subversives. Its acronym stood literally for 'Death to Spies.'

FRANCE

Bureau Central de Renseignements et d'Action: The French Central Bureau of Intelligence and Operations (BCRA) was created by the Free French command after the fall of France in the spring of 1940 and later became the modern French intelligence service.

ITALY

Servizio Informazioni Militare (SIM): Functionally, the Italian SIM was equivalent in Fascist Italy to the Abwehr in Nazi Germany. SIM was officially a directorate of the Italian Army, and its cryptology section achieved notable successes.

JAPAN

Kempeitai: Officially the Kempeitai served as the military police section of the Imperial Japanese Army; however, its authority extended to espionage, counterintelligence, and secret police operations during World War II.

Images: Alamy, Shutterstock/Rex, Getty Images

ENIGMA

HOW BRITAIN'S CODEBREAKERS TURNED THE TIDE IN WWII

Discover how the men and women of Bletchley Park cracked the 'unbreakable' German Enigma and helped defeat Hitler's Nazis

It's February 1942; the carnage of World War II shows no signs of stopping and the balance of world power is precariously poised. Night is about to fall on the Atlantic Ocean and as darkness comes the water is inky-black and icy. In the depths of seas around the world, German U-boats cruise like predators stalking their prey. They lie in wait, patiently waiting their turn to pounce; brazenly, some even encircle convoys, sailing invisibly around them. On this night, one U-boat fires off its torpedoes and an American convoy ship is engulfed in bright flames that light up the sky. The crew on this convoy know they will perish in this icy sea and that the vital supplies and provisions they are carrying across the Atlantic to Britain will also be lost. As screams and shouts finally give way to an eerie silence, its neighbours can only watch helplessly, fearing their turn may soon come. The deadly wolfpack have claimed another victim. The Allies are virtually defenceless against them, knowing only that these deadly ships will strike again, but not where or when.

As the year draws to a close a German U-boat, the U-559, is spotted off the coast of Palestine by HMS Petard and subsequently depth-charged. This time it is the U-boat crew who know that all is lost: their vessel is sinking and they must abandon ship. Lieutenant Anthony Fasson, Able Seaman Colin Grazier and Tommy Brown swim out to it, even though the boat is rapidly sinking below the waves. Seeing some lights remaining on inside the boat, they are astounded to find a four-rotor Enigma (the machine the Germans use for communications) and a book of current Enigma keys. In an act of bravery and ingenuity, they wrap the machine, the keys and the bigram tables in waterproof material, and rescue them for the Allies, not realising how vital their discovery will prove to be. With supreme effort, they manage to reach 16-year-old Naafi boy Tommy Brown, who has waited outside the boat, and hand him the machine and the books. It is the last act of Fasson and Grazier, for they go down with U-559 as it sinks. They are both posthumously awarded the George Cross.

This treasure – for that is what it was to the British codebreakers – made its way to Bletchley Park, a country house in rural Buckinghamshire that had been set up as Intelligence Headquarters at the start of the war. Those based there knew they now had a good chance to get back into breaking the German naval codes, codenamed 'Shark', and affect the outcome of World War II. An eccentric young mathematician named Alan Turing would have a key role to play in breaking the Nazi secret code.

Born in 1912, Turing came to Bletchley from Cambridge, aged 27, the day after Britain declared war on Germany. His clothes were dishevelled, at best; others thought he often dressed like a tramp. When excited over some problem or idea, he would stutter with his eagerness to express his legion of ideas. He would often be seen riding his bicycle around the Bletchley countryside, wearing a gas mask to avoid the pollen that set off his hay fever. In his office, he would chain his coffee mug to the radiator so no one else would take it. With little faith in banking and currency during wartime, he put his money into silver bars which he then buried, intending to dig them up after the war – not realising that by the time he had followed his own elaborate set of instructions for finding them, a new town called Milton Keynes was being built over the countryside. To the onlooker, Alan Turing totally fitted the bill of a typical, eccentric, academic boffin; to his colleagues, themselves some

Zur Beachtung!

German forces disguised their communications through the Enigma machine

GLOSSARY

ENIGMA

Resembling an expanded typewriter, the Germans used this machine for communication. It is a portable machine that enciphers and deciphers messages using a keyboard, rotors and electrical impulses in order to generate millions of possible letter combinations.

TYPEX MACHINE

Standard British cipher machine with special modifications so that it operated like Enigma, with rotors, keyboard and a paper feed with a printer. It was used to turn encrypted text back into German.

BOMBE

Not a computer, but an electronic machine that could check off, at speed, hundreds of possible letter combinations to reduce the potential number of that day's possible Enigma settings.

CRIB

An intelligent guess made by looking for patterns in the coded text, usually found in common phrases or words used by the German operators, or sometimes by spotting their mistakes, such as lazy, repeated word use, use of their girlfriend's name, or a rude word, for example

CILLIS

Procedural errors by German Enigma operators, where they used recognisable message settings instead of random, or had failed to alter the rotor wheel position before sending their text.

MENU

A set of diagrams based on that day's 'cribs', to feed into the Bombes to help reduce the length of time needed to confirm that day's Enigma settings.

WRENS

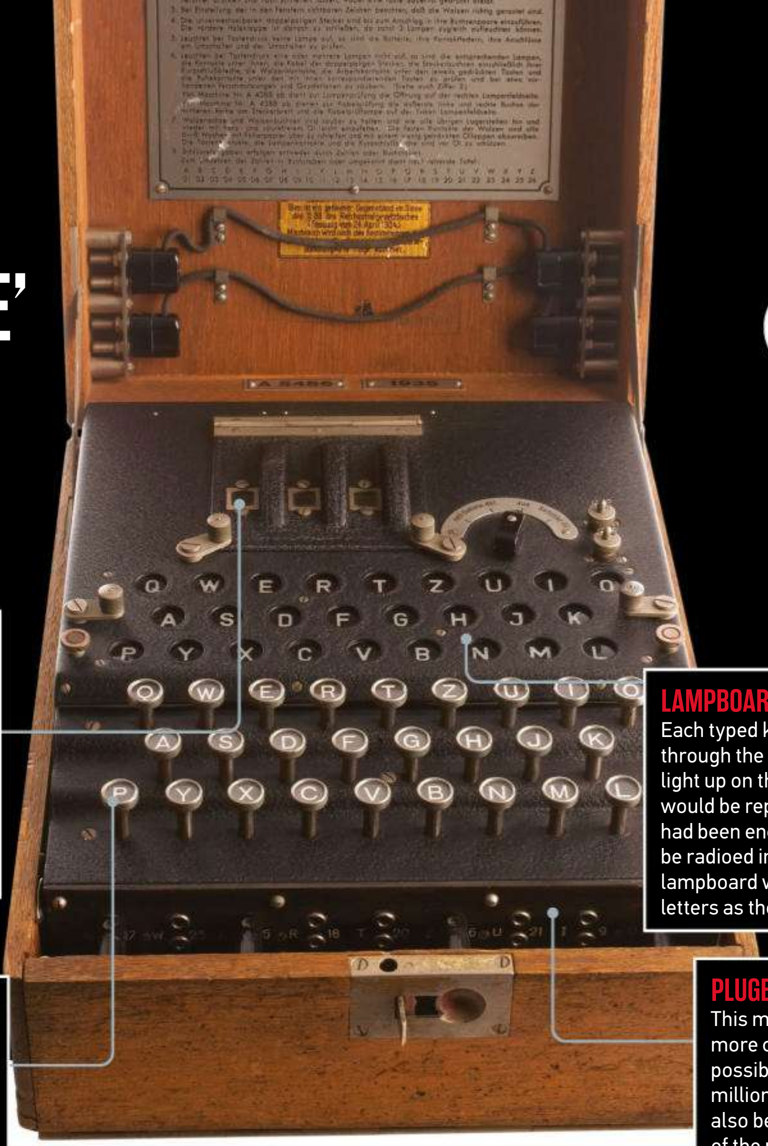
Name given to members of the Women's Royal Naval Service.

COLOSSUS

The world's first semi-programmable computer. A practical, digital processing machine, it used 1,500 valves and could do mathematical calculations in hours that had taken weeks by hand.

THE 'UNBREAKABLE' ENIGMA

Discover the main devices on the complicated and portable German communications machine



ROTORS
The standard Enigma had three rotors, the advanced machine had four. These scrambled messages into unintelligible cipher text. Each rotor had numbered ring scales for each of the German Armed Forces and the rotors could be changed daily. The settings were changed at midnight and each rotor could be set to any one of 26 different ring settings.

KEYBOARD
As the operator pressed one of the 'typewriter' keys, an electric current was sent through the rotating code-letter wheels. No Enigma letter could ever be enciphered as itself. The recipient operator would type into his machine the received Morse message in the same order.

LAMPBOARD
Each typed key sent an electrical impulse through the machine and a letter would light up on the adjacent lampboard. This would be repeated until the whole message had been enciphered, when it would then be radioed in Morse to its recipient. The lampboard would light up with the real letters as the cipher was typed in.

PLUGBOARD
This made the machine's wiring much more complicated, increasing the possible encoding combinations by millions. The plugboard settings could also be changed daily. The A-socket of the plugboard connected to the first terminal inside the entry plate, the B-socket to the second, and so on.

DILLY KNOX

British, 1884-1943

BRIEF BIO

Knox worked with Turing from September 1939 at Bletchley, from where the first breaks into daily-changing Enigma were made. Knox and his team, Intelligence Service Knox, broke the German Secret Service (Abwehr) codes in December 1941. An Old Etonian and a student from King's College, Cambridge, Knox was regarded as brilliant but eccentric. His background was in classics and languages rather than mathematics.

> **"FOR THE DURATION OF THE WAR, HITLER BELIEVED ENIGMA TO BE UNBREAKABLE, ESPECIALLY AFTER THE GERMAN ARMY CHANGED THE CIPHER DAILY INSTEAD OF ONCE EVERY FEW MONTHS"**

of the brightest minds in the country, he was a true genius of his time.

The Allies knew the Germans were using a machine named Enigma and teams of codebreakers at Bletchley were trying to crack the code this machine used. The teams worked in newly constructed prefabricated huts, each given a number instead of a name for secrecy. In Hut 8 they were concentrating on cracking the German Naval ciphers. They already knew that Naval Enigma operators were more careful than Army operators, thus making it harder to use educated guesses, or 'cribs', to spot German mistakes. But now they realised the number of possible settings were hugely expanded, due to the increase in code wheels on the four-rotor Enigma. Turing, already working on updating the Polish Bombe machines, realised the vital importance of having machines that could speed up the process by mechanically checking off these millions of settings combinations.

While at Cambridge before the war, Turing had developed an original idea: a 'Universal Turing Machine', a sort of 'super-typewriter' that could identify symbols, write, erase and carry out other tasks, all automatically and without human intervention. However, having studied previous Polish encryption machines and a replica Enigma, Turing knew he needed more than even his hypothetical machine. So he studied the mechanics of Enigma, the rotors, wiring and boards, and sought to devise an electrical system with circuits that could decrypt that same text.

Human intervention, Turing knew, was still essential: 'cribs' and mathematical work would

A BRIEF HISTORY OF WWII'S CODEMAKERS AND BREAKERS

1923

INVENTION
A Dutch invention, the first cipher motor machine is patented by Dr Arthur Scherbius, who markets it at the 1923 International Postal Union Congress for use in banking, but it proves unsuccessful. Enigma is marketed for use in Germany's armed forces instead for its potential for military use.

1932

THE POLES
Three Polish mathematicians – Marian Rejewski, Henryk Zygalski and Jerzy Rozycki – make the first break into military Enigma using mathematical methods. This includes the invention of Zygalski sheets, a slow and time-consuming method that was used in the days before advances were made to the Enigma machine.

1939

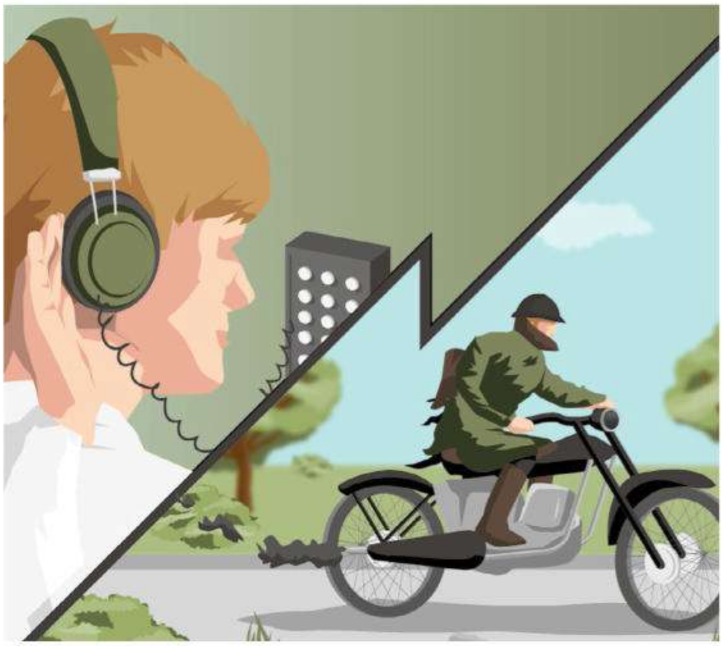
SHARING SECRETS
In July, a secret meeting takes place in Poland between representatives of Bletchley Park (Peter Twinn, Dilly Knox, Alan Turing and Tony Kendrick) and Gustav Bertrand of French Intelligence, to share discoveries made since 1932 by Polish cryptanalysts. By September, the Poles have passed models of Enigma to British intelligence.

1940

BREAKS, BOMBES AND TIPS
In January the 'Green' (Army) and 'Red' (Luftwaffe) Enigma keys are cracked and in February the sinking of U-33 brings Bletchley its first 'pinch': an Enigma machine. By March the first Bombe machine, 'Victory', is installed into Hut 1 and later that year a new Enigma key is introduced.

Step-by-step guide to codebreaking

Follow our six-point guide to crack codes like they did in Bletchley Park



01 LISTEN TO THE ENEMY TO GATHER THE INTELLIGENCE

At Station X, Bletchley originally used a radio-transmitting room at the top of the Mansion House's turreted tower to intercept Morse, teleprinter and radio codes. However, Bletchley's secret location needed protection, so a series of 'Y' stations were set up across the country. Intercepts were sent to Bletchley either by motorcycle courier or by direct teleprinter line, and were logged into the Registration Room.

02 BREAK THE CIPHER USING MATHEMATICS AND CRIBS

Using brainpower and ingenuity, the codebreakers first worked by hand by looking for features that corresponded to the original plain text. Using cribs and contact analysis, the codebreakers could often spot a possible pattern in the text. Human error on the part of the operators and psychology (imagining how the operators might undertake their work) also came into play when looking for cribs.

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03 MAKE SENSE OF THE NONSENSE

Process and check that day's 'cribs', then set up the Typex machines to the same settings as the Enigma machine and type in the enciphered message. Once deciphered it would come out on long strips of paper; cut and glued onto the back of the original message, they were sent back to Hut 6 to finish any decryption left over, via a specially built chute, and then ultimately to Hut 3 for final translation and strategic analysis by a special team.

04 TRANSLATE AND UNDERSTAND THE GERMAN PLAIN TEXT

Hut 3 would use linguists to translate German, Italian and Japanese codes, using the decrypted text sent from Hut 6. At this stage, the Index room would check and cross-reference to see if anything could be spotted that had been seen before, using Hollerith machines and thousands of index cards in Block C. Once analysed, the information was ready to send on as usable intelligence to Churchill in his daily update.

05 SEND INTELLIGENCE TO CHURCHILL AND COMMANDERS IN THE FIELD

Only a few commanders knew about Bletchley and were forbidden to act on its findings, codenamed 'Ultra', until the Germans had been deceived into thinking it had come from another source altogether. 'Special Communication Units' were set up to feed information to the field, first in France in May 1940, then in North Africa and elsewhere from March 1941. All 'Ultra' messages were destroyed once received.

1941

CRACKING DOLPHIN

Using the 'rodding' technique, the Italian Naval cipher is broken after the Battle of Matapan by Dilly Knox and his 'girls.' With the recovery of Enigma coding documents and notebooks from German submarines, notably U-110, along with repetitive weather transmissions, Bletchley is finally able to read German Naval Enigma.

1942

CRACKING SHARK

In February, the Germans introduce a more complex four-rotor Enigma for U-boats: 'Shark', leading to a blackout. In October, two German short-signal codebooks arrive at Bletchley, rescued from U-559 by Fasson and Grazier on HMS Petard. Shaun Wylie and the Hut 8 codebreakers can now break Shark and read U-boat traffic.

1943

COLOSSUS

The Germans introduce a new short weather code, but Hut 8 avoid another blackout with the help of the faster Bombes. Shark is re-broken within ten days – a deciding factor in the Second Battle of the Atlantic. Max Newman and Tommy Flowers design and build Colossus, the world's first semi-programmable computer.

1944

D-DAY SUCCESS

Hut 8 and Hut 4's crucial decryption and translation of German Naval Enigma plays a key role in the Double Cross deception, codenamed Operation Fortitude South, fooling Hitler into believing the Allied landings were planned for Pas de Calais and not Normandy, thus having a huge impact on the outcome of D-Day.

EYEWITNESS
JEAN VALENTINE

The former member of the Women's Royal Naval Service served at Bletchley

Image: Bletchley Park Trust

How did you come to be at Bletchley?
I grew up in Perth, Scotland, and when I was 18 I decided to join up. I took an intelligence test at a local Navy recruiting centre. When I got my summons, I was given a railway warrant to go to a training centre for Wrens in Dumbartonshire. After two weeks I was told I was going to be sent to London, but was not told what my work would be. I was then sent on from London to a Y Station in Eastcote, Middlesex, where I first saw a Bombe machine. Later I was sent to work at Bletchley Park.

Were you aware of the other work going on at the Park?
No, everything was compartmentalised. When I was working on the Bombes, if we got a possible result we would phone it through to an extension number: it wasn't until after the war that I realised I had been phoning Hut 6 just across the path! If the menu had worked and German text came out on the tape, it went to the pink hut just opposite Hut 11 where it was translated into English. Apart from that small section of the Park, I had nothing to do with any other work carried out elsewhere.

What did you do in your free time?
We used to go to the village hop [dance] on a free Saturday night. There were lots of clubs and societies at the Park, which men and women could attend if their shifts allowed and if they could get to and from their billets to attend: music, theatre, sports; [it featured] a huge variety.

What was the work like?
The shifts were quite arduous: 8am to 4pm, 4pm to midnight or midnight to 8am. Once you had learnt how to work the Bombe it wasn't complicated, just repetitive. The Bombe would search for answers and would stop if it thought it had found one. It was noisy, but like a tickety-click noise; it didn't really bother me, although it did others. We were young and disciplined and knew we were part of the war effort so we just got on with it. I found the work a rather fascinating experience; I enjoyed it! There were all sorts of people working at the Park, all different classes, and we just all worked together. Everyone was treated the same, whether military or civilian. The night shifts were a bit disruptive – especially on our eating patterns. There were some cases of burnout: I was once sent to the sick bay and slept for nearly three days! Then I had two weeks leave and came back refreshed.

What did you do after Bletchley?
In 1944 when I was 19 years old, I was sent to Ceylon to work on Japanese meteorological codes; I stayed there for 15 months. I never told a soul I was working at Bletchley Park. It was a great surprise when the first book came out in 1974 and the big secret was out. However, many people were uncomfortable with talking about Bletchley after all that time, and some are still.

still be needed to help the Bombe machine, the device that would decipher encrypted German messages. The thought of a machine capable of checking millions of combinations at speed was revolutionary. However, Turing was a theoretician rather than a practical codebreaker, so Gordon Welchman, a codebreaker and brilliant administrator working in Hut 6, recruited Oliver Lawn, a mathematician from Cambridge, to help with the making of the machine; thus 'Victory', the first Bombe, was built and installed in Hut 1 on 18 March 1940. Welchman later improved the design of the Bombe with an electronic diagonal board, which increased the machine's powers and capabilities.

Although the German Air Force Enigma was by now being read daily, Naval Enigma proved a tougher nut to crack. In 1941, two significant sea battles – one inside the Arctic Circle, one in the Atlantic – led to the recovery of Enigma coding documents. It was with this information that Turing calculated a new method he called 'Banburismus', because it involved holes punched on long pieces of paper made at Banbury. For the rest of the summer of 1941, Bletchley was able to read the majority of German Naval Enigma, thus providing vital protection to British shipping and a real success story for Bletchley. A significant breakthrough had been achieved, but the team would face tougher battles as the war rumbled on.

The genesis of Bletchley occurs in August 1938 when, at a small rural railway station half way between the university cities of Oxford and Cambridge, a group of ordinary looking people arrive for a social gathering at Bletchley's Victorian country house. Led by Captain Ridley, the entourage are here to enjoy that simple but favoured pursuit of the upper classes: a shooting party weekend. Or are they? In fact, the group of men assembling at this isolated location in the depths of the Buckinghamshire countryside are all either members of MI6 and the Government Code & Cipher School (GC&CS), or esteemed scholars and academics, turned codebreakers. For now, they will assess the mansion house and its surrounding area as a possible location to site intelligence operations in the event of a war that seems likelier with every inflamed speech Hitler gives.

When the inevitable happens, they and others return to begin the work that some later believed shortened the war by two years. Men and women from all walks of life will descend onto the railway platform and begin the walk up to Bletchley Park: mathematicians, classicists, engineers, Wrens, WAAFs, linguists, typists, administrators and even debutantes. Each will become a small cog in a large wheel, working independently and under extreme secrecy, unaware of the work being carried out in any hut outside their own. Having signed the Official Secrets Act, they are aware only of the vital importance their work could be to the war effort and that they can never speak of it to anyone.

Despite their undoubted brilliance, it wasn't the British at Bletchley who first made a break into Enigma: that distinction belongs to another nation entirely. In 1932, the Polish had first cracked Enigma; at the time, the cipher changed only once every few months, but by the outbreak of the war it was daily. With the invasion of Poland imminent, they turned to the British for help in breaking the Enigma settings, now running at an intimidating 15 trillion possible combinations – that's a staggering 15 billion billion.

Teams of top codebreakers were installed at Bletchley Park in the prefabricated numbered huts. These teams were led by Dilly Knox, John Jeffreys, Peter Twinn and Alan Turing. The first breakthrough came with the unravelling of the administrative key used by the German Army, simply known as 'The Green.' This was followed by breaking the 'Red' key, which was used by the Luftwaffe. Of course, it was of paramount importance that the secret that Enigma's code

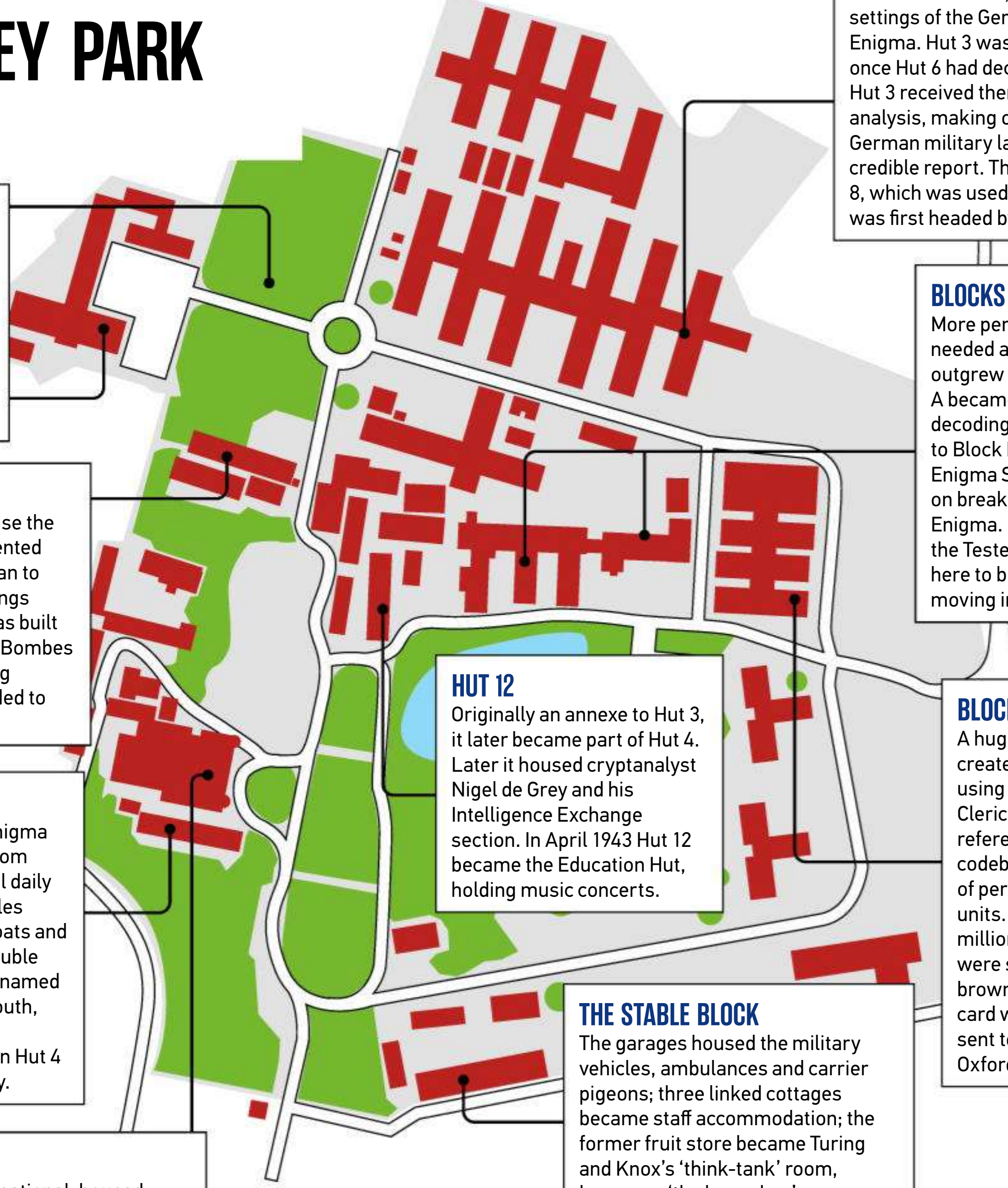
GORDON WELCHMAN

British, 1906-1985

BRIEF BIO

Recruited by Alastair Denniston from Cambridge, after a short two-week course in London in March 1939, he reported to work at Bletchley on 4 September. He instigated Hut 6 Traffic Analysis (SIXTA), and with his immense organisational skills he turned Bletchley Park from a cottage industry to an efficient organisation taking in intercepts and outputting intelligence 24 hours a day, seven days a week, every day of the year.

MAP OF BLETCHLEY PARK



BLOCKS F & H

These housed the Testery, Newmanry and the Heath Robinson and Colossus machines. Block F also housed Japanese codebreaking.

HUTS 11 AND 11A

Hut 11 was built to house the Bombe machines, invented by Turing and Welchman to speed up Enigma settings decryption. Hut 11A was built in 1942 to house more Bombes and train the increasing number of Wrens needed to operate the machines.

HUT 4

Used for decrypting Enigma messages sent over from Hut 8, providing crucial daily intelligence in the battles between German U-boats and Allied convoys. The Double Cross Deception, codenamed Operation Fortitude South, was made possible by messages processed in Hut 4 in the lead-up to D-Day.

THE MANSION

Headquarters and recreational; housed senior staff's offices. Originally held the telephone exchange and teleprinter rooms, later moved to a blast-proof hut. This Victorian country house also had a dining room, library, billiard room and ballroom.

D-BLOCK

This housed Hut 6, which decrypted daily settings of the German Army and Air Force Enigma. Hut 3 was also in this block, and once Hut 6 had decrypted the messages, Hut 3 received them for translation and analysis, making often-unintelligible German military language read like a credible report. The block also housed Hut 8, which was used for naval decryption and was first headed by Turing.

BLOCKS A & B

More permanent buildings were needed as Bletchley personnel outgrew the wooden huts. Block A became the Naval Section's decoding centre. Hut 4 moved to Block B in 1942. The Naval Enigma Section now concentrated on breaking into the four-rotor Enigma. Ralph Tester's section, the Testery, was also housed here to break into Lorenz, before moving into Block F.

HUT 12

Originally an annexe to Hut 3, it later became part of Hut 4. Later it housed cryptanalyst Nigel de Grey and his Intelligence Exchange section. In April 1943 Hut 12 became the Education Hut, holding music concerts.

BLOCK C

A huge clerical index was created by punching onto cards using Hollerith machines. Clerical staff built up a cross-referencing system to help the codebreakers, detailing names of personnel, locations and units. Each week, up to two million cards were used; they were stored in thousands of brown cardboard boxes. Each card was photographed and sent to the Bodleian Library in Oxford as a back-up.

THE STABLE BLOCK

The garages housed the military vehicles, ambulances and carrier pigeons; three linked cottages became staff accommodation; the former fruit store became Turing and Knox's 'think-tank' room, known as 'the bungalow'.

What the senior staff's offices are believed to have looked like

The British used Typex cipher machines from 1937 was being broken was kept secure, so a cover MI6 'spy', nicknamed 'Boniface', was invented; throughout the war, Germany believed any breaks in intelligence came as a result of double agents working in the field, instead of a remote codebreaking team.

The codebreaking mechanism was industrialised by the Bombe machine, invented by Alan Turing and Gordon Welchman in response to the need to speed up the process of running through all the possible Enigma wheel configurations. Operated by Wrens, the work was hot, smelly and noisy, but it was invaluable. By 1942, Bletchley's success had reached North Africa, where intelligence enabled the Royal Navy to cut Rommel's supply lines and keep General Montgomery informed of his every move. Early that year, however, the Germans introduced a more complex Enigma machine with an extra rotor. This caused a major information blackout and proved to be one of the greatest challenges to the codebreakers at Bletchley. However, by the end of 1942, the codebreakers had cracked that one too, thanks to the bravery of the seamen Fasson and Grazier who captured vital Enigma keys and books from the sinking U-559. From now on, Bletchley was able to read 'Shark'.

However, it was the breaking of the German's strategic ciphers that gave Bletchley arguably its greatest success. Initially, manual efforts enabled the cracking of these ciphers, used by Hitler to communicate with Berlin and his commanders in the field. Professor Max Newman realised a new type of machine was needed to keep up with the increasing volume of intercepts being received. With the help of a brilliant young General Post Office (GPO) engineer, Tommy Flowers, such a machine was designed and constructed. This became known as Colossus: the world's first semi-programmable electronic computer and it became essential to the planning by Allied forces for the invasion of Europe and operation D-Day.

Such successes were hoped for at that first 'shooting party' at the mansion in 1938, but, certainly in the beginning, there were many – even within the government itself – who doubted the impact codebreakers could make to the strategic planning of the war. Of these codebreakers, perhaps the most famous known today is Alan Turing. He may have looked and even acted like a true eccentric, but he possessed one of the finest brains of his generation, and his unique ideas for a 'Universal Turing Machine' undoubtedly laid the groundwork not only for the development of the electronic machines built inside Bletchley as the War progressed, but also for the concept of the computer age. Even in a setting such as Bletchley that was filled with great minds he stood out, leading the historian and wartime codebreaker Asa Briggs to comment, "You needed exceptional talent, you needed genius at Bletchley and Turing's was that genius."

Of all his colleagues and codebreakers at Bletchley, his work with Tommy Flowers may have excited Turing the most. They first met in 1939, when the talented young GPO engineer was first introduced to the Enigma secret. Both men were enthusiastic, experts in their fields and respected each other from the outset. Turing would sometimes visit Flowers at his laboratory workshop in Dollis Hill, where they first discussed the idea of building a machine that could decrypt Enigma by using electromagnets. While this would prove to be beyond the scope of the technology then available, Turing's blueprints and vision for such a machine stayed with Flowers and later resulted in Colossus.

OLIVER LAWN

British, 1919-2012

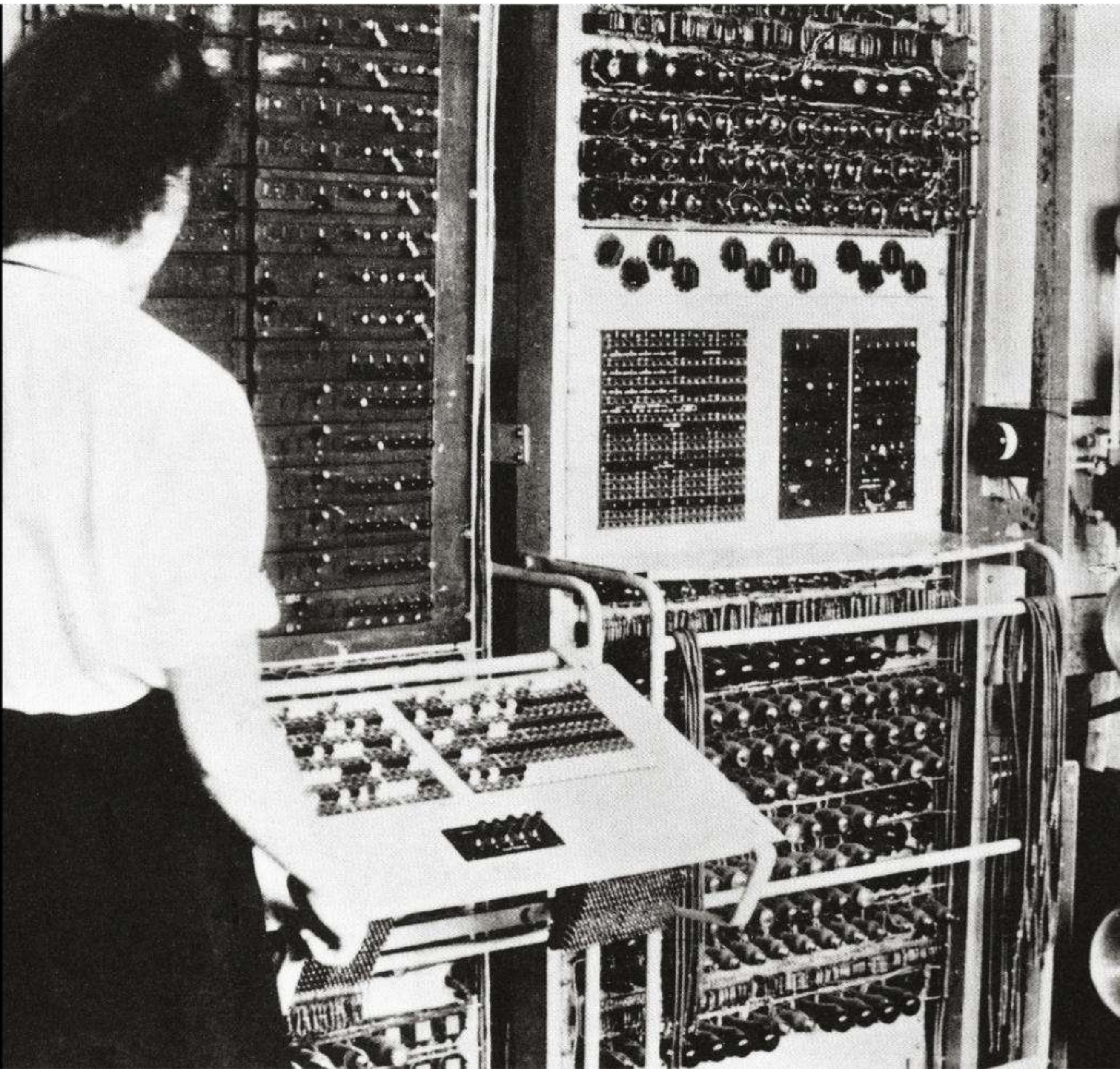
BRIEF BIO

A mathematician and cryptanalyst, Lawn was recruited from Jesus College, Cambridge in July 1940 by Welchman to work on German Army and Air Force Enigma. Working in Hut 6 and then in Block D, he contributed to the design of the Bombes (high speed, four wheel) in 1943. In January 1944 he made the first break into new Enigma 'Uncle D' – a German modification of the three-rotor Army and Air Force Enigma with new reflector wheel and pluggable wiring.

CHURCHILL'S GOLDEN GEESE

The British PM was one of Bletchley Park's biggest supporters

Daily boxes of high-level decrypts were sent to Churchill's office in locked boxes, the key to which he carried on his personal key ring. Only a select few in the Foreign Office and the military knew where they had come from, and not all of those shared Churchill's faith in Bletchley Park. During his visit in September 1941 he inspected the machines and huts, meeting senior codebreakers. Afterward, he gathered them outside Hut 6 for a short speech, in which he famously described them as his "geese that lay the golden egg – and never cackled." Recognising Churchill's support and respect, Bletchley sent him a letter asking for more staff. The prime minister's response was swift and decisive: "Make sure they have all they want on extreme priority and report to me that this has been done. Action this day."



A reconstruction of the Phoenix Bombe, at Bletchley Park

> **“TURING WOULD OFTEN BE SEEN RIDING HIS BICYCLE AROUND THE BLETCHLEY COUNTRYSIDE, DRESSED IN FULL GAS MASK TO AVOID THE POLLEN THAT SET OFF HIS HAY FEVER”**

Behind this genius was a troubled man, though. The former Cambridge student could be awkward socially and was a homosexual in an age when this was not only frowned upon, but actually illegal. He proposed to a colleague at Bletchley, Joan Clarke, who accepted, but he then recanted the offer and told her of his sexual orientation. Turing became something of an all-purpose consultant for the growing operation and crossed the Atlantic in November 1942, for highest-level liaison not only on the desperate U-boat Enigma crisis, but on the electronic enciphering of speech signals between Roosevelt and Churchill. His genius and contribution to the war effort was never properly acknowledged in his lifetime, though, and in 1952 he faced criminal charges after he struck up a relationship with another man, and was placed on hormonal treatment designed to reduce libido. In 1954, at the age of 42, Turing was found dead in his home in Manchester, having apparently committed suicide by cyanide poisoning.

Alan Turing devised a number of ways for breaking ciphers

Today, Turing is rightly celebrated for his many and varied achievements, and a bust of his head sits beside an exhibition of some of his personal effects. In 2009, Prime Minister Gordon Brown apologised on behalf of the government and the nation for Turing’s prosecution, and publicly acknowledged the debt of gratitude owed to him by the Allies. The nation and the world’s gratitude should be directed at Turing and those he worked with, all of whom passed through Bletchley’s nondescript railway station. That station saw so much: the girl who joined the Wrens for the dashing uniform and a chance to serve at sea, who then found herself posted to a place just about as far from the sea as it was possible to get in England. The young man in the middle of his mathematics degree and a renowned chess champion, invited to put aside his studies for the duration, and the secretary, eager to ‘do her bit’, who applied for a clerical position in London but was found to be fluent in German and instead surprisingly given a train ticket to a small town called Bletchley.

They were ordinary men and women, some barely out of school, whose unique talents and skills were put to use in an extraordinary way. They all came willingly, if a little unknowingly – often via a small, anonymous house in Baker Street, where they signed the Official Secrets Act – to this seemingly insignificant Buckinghamshire town. As they stepped off those trains, they would have had no idea what amazing achievements they would become part of, even if they would never see recognition for it in their lifetime; nor could they have known the legacy they would help bestow on the nation. But come they did: first slowly, in their hundreds, then more and more as Britain faced the horrors of the Blitz, and then battles at Dunkirk and D-Day, until by 1945 there were about 10,000 people working at the Park. Bletchley is where their story begins, a story that can now be told in full and rightfully celebrated.

BLETCHLEY’S THREE GREATEST SUCCESSES

The code-breaking centre’s greatest achievements

01 CRACKING LORENZ

Although the ‘Y’ Stations were intercepting the German cipher machine Lorenz messages in early-1940, they had no idea how the machine was encrypting them. John Tiltman spotted an operator’s repetition with abbreviations in August 1941 and used these small inconsistencies to crack the code. Bill Tutte used mathematical analysis to work out how the Lorenz machine worked without even seeing one and by 1942 Lorenz messages were being deciphered. Complications to the Lorenz design in 1943 led Max Newman and his team to need to design an entirely new electronic machine that would break Lorenz; the Colossus.

02 THE INVENTION OF COLOSSUS

Tommy Flowers, a brilliant GPO engineer, built Newman’s design and created the world’s first electronic semi-programmable computer in December 1943. By the end of the war, the ten Colossus machines in use were ordered to be dismantled, along with all records but only six were. It had taken weeks to break Lorenz with mathematical calculations: Colossus could do this in hours, reading the paper tape at 5,000 characters a second and sending the tape travelling in the wheels at 48 kilometres (30 miles) per hour.

03 D-DAY

Without Bletchley, D-Day may well have had a different outcome. In June 1944, Colossus helped to fool German High Command of Allied plans. As well as providing information on German positions, the breaking of ciphers sent by the German Secret Intelligence Service allowed the Allies to confuse Hitler over where they would land; Hitler decided to divert his troops away from the very beaches the Allies had chosen in Normandy. Bletchley was able to read messages between Garbo (a network of 27 fictitious spies) and the Abwehr, showing Hitler had fallen for the deception.

Images: Alamy; Getty; Edward Crooks;

SAS GREAT ESCAPES

Best-selling author and expert on the history of the Regiment, Damien Lewis, reveals two incredible stories of endurance and survival in World War II

WORDS **DAMIEN LEWIS**

During the Second World War the SAS brought an unorthodox approach to fighting the enemy using audacious bluff and nerve. They also became pioneers in the art of escape and evasion. Here are two stories of the enduring qualities of the 'SAS great escapers', from the early stages and latter chapters of the Second World War. Each embodies the spirit of never giving up and the desire to escape, evade and survive come what may. They epitomise the founding principles of the SAS regiment. While the weaponry, vehicles, insertion techniques and escape and evasion kit might have changed greatly, the basic tenets of the SAS remain the same today as they were in WWII – proving absolutely that who dares wins.

Image: Alamy

Damien Lewis is a former foreign correspondent and now the author of several best-selling history titles, including several on the history of the SAS. His latest book, SAS Great Escapes, is available now in all good stores

Gavi fortress in Italy was said to be escape-proof – but that didn't stop the imprisoned SAS men from trying

ITALY, 1941

On 10 February 1941, 36 British raiders parachuted into the night skies above Fascist Italy to undertake a mission of breathtaking daring. They aimed to blow up the Aqueduct Pugliese, source of the fresh-water for the cities in the south of the country and the key ports used by the Italian armed forces.

Codenamed Operation Colossus, this was the first ever Allied airborne operation and it was carried out by 11 Special Air Service Brigade, the forerunner of David Stirling's soon-to-be-legendary SAS. According to the raid's commanding officer, Major 'Tag' Pritchard, his force would be "pioneers or guinea pigs, whichever way you prefer to look at it".

Operation Colossus was an utterly audacious and daring undertaking, but not everything went to plan that night. One of the Whitley warplanes carrying the team of Royal Engineer sappers went missing, along with the bulk of the explosives. Plus, the mission briefings proved woefully wrong, mistakenly reporting the piers of the aqueduct to be constructed of brickwork instead of reinforced concrete – which would take far more explosive power to destroy.

Everything now relied upon the genius and nerve of the one remaining sapper in Pritchard's team – Canadian Lieutenant George Robert Paterson. A tough, resolute giant of a man, Paterson decided there was only one option: to pack all the crates of explosives around the one pier and hope for the best. Having lit the fuse, and after a thunderous roar, Paterson and his fellow raiders witnessed a fabulous sight: the Aqueduct Pugliese was cut in two, its precious water cascading into the valley below.

The raiders split up into three parties, one led by Paterson, seeking to make their escape across the Apennine Mountains, heading for Italy's western shore where the British submarine HMS Triumph should be waiting to rescue them. Frozen, exhausted and hampered by ankle-deep freezing mud, on the second night Paterson decided to risk going by road, or they would never make the rendezvous in time. But at a crossroads they failed to see the heavily armed Carabinieri lying in wait.

Captured and transported to a Naples military prison, Paterson was interrogated by the Questura – Mussolini's secret police – but refused to talk. To his relief, threats of execution proved hollow. Instead, as British prisoners of war they were transferred to a remote POW camp in the mountains around Sulmona, in south-central Italy.

> "EVERYTHING NOW RELIED UPON THE GENIUS AND NERVE OF THE ONE REMAINING SAPPER IN PRITCHARD'S TEAM – CANADIAN LIEUTENANT GEORGE ROBERT PATERSON"

Right away Paterson and his fellow captives set about masterminding a series of ingenious escape attempts: digging a tunnel leading from a broom cupboard to beyond the perimeter fence, chiselling through a bricked-up passageway, and more. But one by one their escape attempts were foiled – all except for one of the Colossus team.

Pritchard's second-in-command, Lt Anthony Deane-Drummond, faked an ear infection and with breathtaking cunning and nerve sneaked past his guards and made it to the Swiss border, and from there back to Allied lines. But Deane-Drummond's escape resulted in the other raiders being transferred to the Gavi POW camp, an ancient fortress that was said to be escape-proof. After long months of incarceration, Paterson felt his hopes ebbing away.

Then, in September 1943, Italy's leaders signed an armistice with the Allies. With German troops taking over the Gavi fortress, the prisoners were told to prepare to be moved. Herded onto a train, all feared a one-way journey to Germany, and Paterson in particular sensed this was his last chance to escape. Utterly determined, he and others burrowed a small hole in the carriage's wooden side. By midnight, it was big enough for a man to squeeze through. As the train slowed, Paterson took a leap into the darkness, his large frame crashing onto the gravel embankment below the railway line.

After a rattle of semi-automatic gunfire, Paterson took his chance and made a run for it, getting clean away. In a hazardous journey through hostile country, Paterson marched day and night across wild, rugged hills with little food, and drinking from streams. On the point of total exhaustion, he reached the town of Brescia where his dishevelled appearance turned heads. But a local man realised Paterson was on the run, introducing him to another English escapee, Corporal Jack Harris.

Harris and Paterson were taken to meet a well-connected figure, Signor Rossi, based in Milan. The pro-British Rossi had already helped many POWs escape across the border into Switzerland. Some, however, preferred to stay in the Italian countryside, sheltering with local families. With the Gestapo hunting for such escapees, Rossi persuaded both Harris and Paterson to join his escape network, for there was yet much work to be done.

Having escaped, Paterson spent three years in the Italian (and Swiss) mountains, operating alongside the Partisans, finally serving as an agent of the Special Operations Executive (SOE)

Image: Damien Lewis

Over the following months Paterson and Harris tracked down dozens of POWs, but found that many were reluctant to risk breaking cover, believing that the Allies were about to liberate Italy. Paterson warned them that was unlikely for a year: they must escape while they had the chance. Perhaps Paterson should have heeded his own advice.

On a journey to aid one such escapee, Paterson was seized by the Voluntary Militia for National Security – the Blackshirts – and locked up in the notorious San Vittore prison, an escape-proof building in central Milan. Hauled off for relentless interrogation by the Gestapo, Paterson knew that should he crack, all in the Italian escape network would pay with their lives.

Despite threats that he would be shot as a spy, he held out. Adjusting to captivity once more was harsh, and made even more so by the brutality of two senior SS officers: Sergeant Major Schwarz and his assistant Corporal Franz, who relished causing pain and humiliation to any who stepped out of line.

Among the prisoners, Paterson was shocked to discover whole families, including women and children – Jews, being prepared for transportation to the Mauthausen concentration camp in Austria. Deeply moved by their plight, he shared what food he could while risking a few words of encouragement. The thought of their dark fate strengthened his resolve to escape once more.

By early summer 1944, Paterson spotted a familiar face in the prison that filled him with despair: Signor Rossi, his friend and mastermind of the Milan escape network, was thrown into an isolation cell. Desperate to speak with him, Paterson had almost lost hope, when one morning Rossi reappeared. The two POWs managed a quick exchange of words. The Gestapo had gleaned nothing from Rossi, barring a list showing the number of Allied POWs he had helped escape – nearly 3,000. Paterson feared his friend would surely be shot, and warned him as much. "There is always a way out if you have money, George," Rossi countered.

> "PATERSON KNEW THAT SHOULD HE CRACK, ALL IN THE ITALIAN ESCAPE NETWORK WOULD PAY WITH THEIR LIVES"

He warned Paterson that one of the warders was being bribed to help him escape. He wanted Paterson to join him. If everything went to plan they would be out in a week's time. Paterson was speechless but thrilled.

The big day arrived and Paterson dressed in some civilian clothes, with prison overalls pulled over them. Using his prison duties as cover, he grabbed a pile of dirty blankets and set off for the perimeter wall, which lay across a wide courtyard. His heart pounding, but keeping his steps measured, he made it across under the watchful gaze of the guards.

Slipping through a gate, he was now on the gravel road between the two perimeter walls. Fifty yards to his right lay a shed. Following Rossi's instructions, he slipped inside, removed his prison overalls, reshaped the fedora hat he had hidden under his arm and prepared for the final breakout. Exiting, he headed for the door in the outer wall – one that was always kept locked. But a duplicate key had been made by the warder that Rossi had bribed. Turning the handle, to Paterson's relief it slid wide open. As an approaching tram bell jangled, freedom beckoned once more.

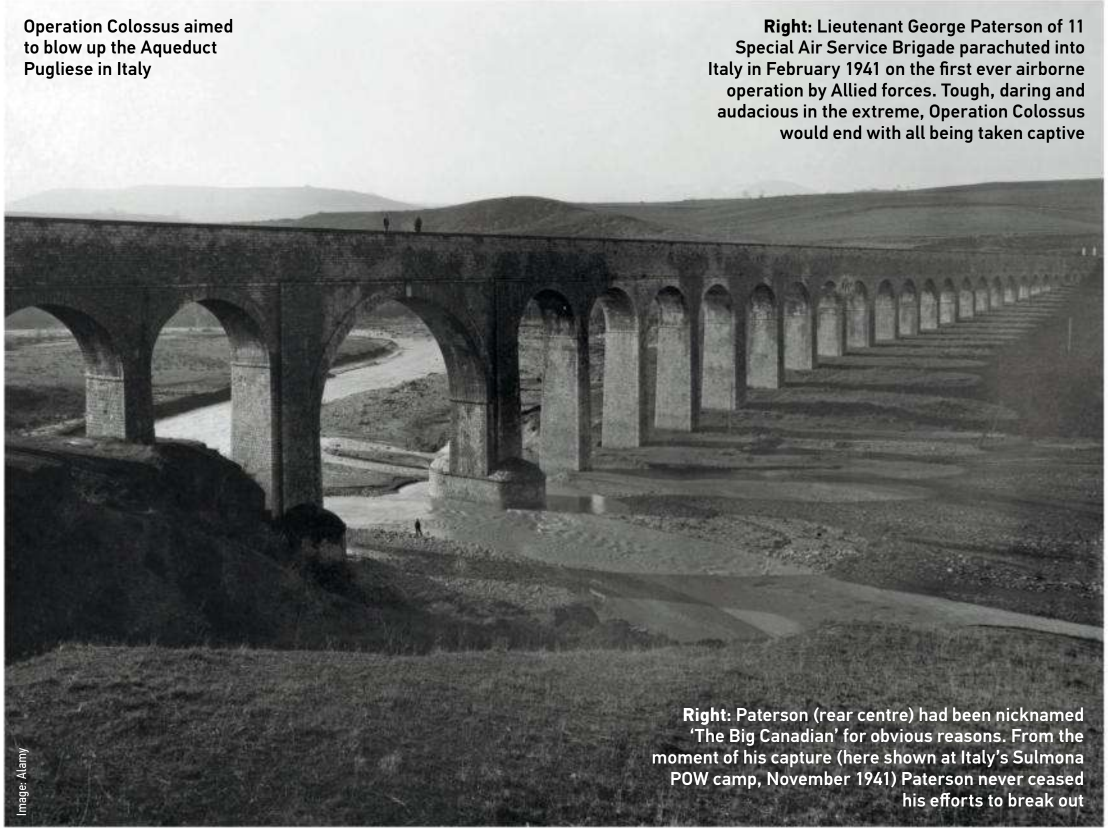
About to step forward, Paterson froze: coming around the corner was the familiar figure of one of Corporal Franz's henchmen. Paterson's only choice was to brazen it out. Pulling his hat brim low, he strode purposefully ahead and slipped around the corner. Without hesitation he headed for the tram and within moments he had dived aboard and was gone.

Heading straight for a trusted contact in Milan, he was told that Rossi had escaped and was heading for Switzerland. Paterson should do the same. After three and a half years on the run and in captivity, Paterson set out on the same journey to freedom that he had made possible for so many others. But his adventures were far from over...

Having reached Switzerland safely, Paterson would be recruited by the Special Operations Executive (SOE), Churchill's 'Ministry for Ungentlemanly Warfare', as an agent. He would return to Italy under a false identity to help the Italian Partisans rise up against the enemy. But in a brutal and bloody battle the Partisans' senior commanders would be shot dead, and Paterson, injured, would be taken captive once more and returned to the dreaded San Vittore prison.

Surviving the terrible experience, he made one last attempt to escape, in April 1945, even as the Allies drew close to Milan. Mounting an extraordinary breakout with his fellow prisoners, they overpowered the guards and stormed through the gates to final freedom.

For his incredible exploits in Italy, George Robert Paterson would later be promoted to captain and awarded the Military Cross with two bars – the equivalent of the Military Cross three times.



Operation Colossus aimed to blow up the Aqueduct Pugliese in Italy

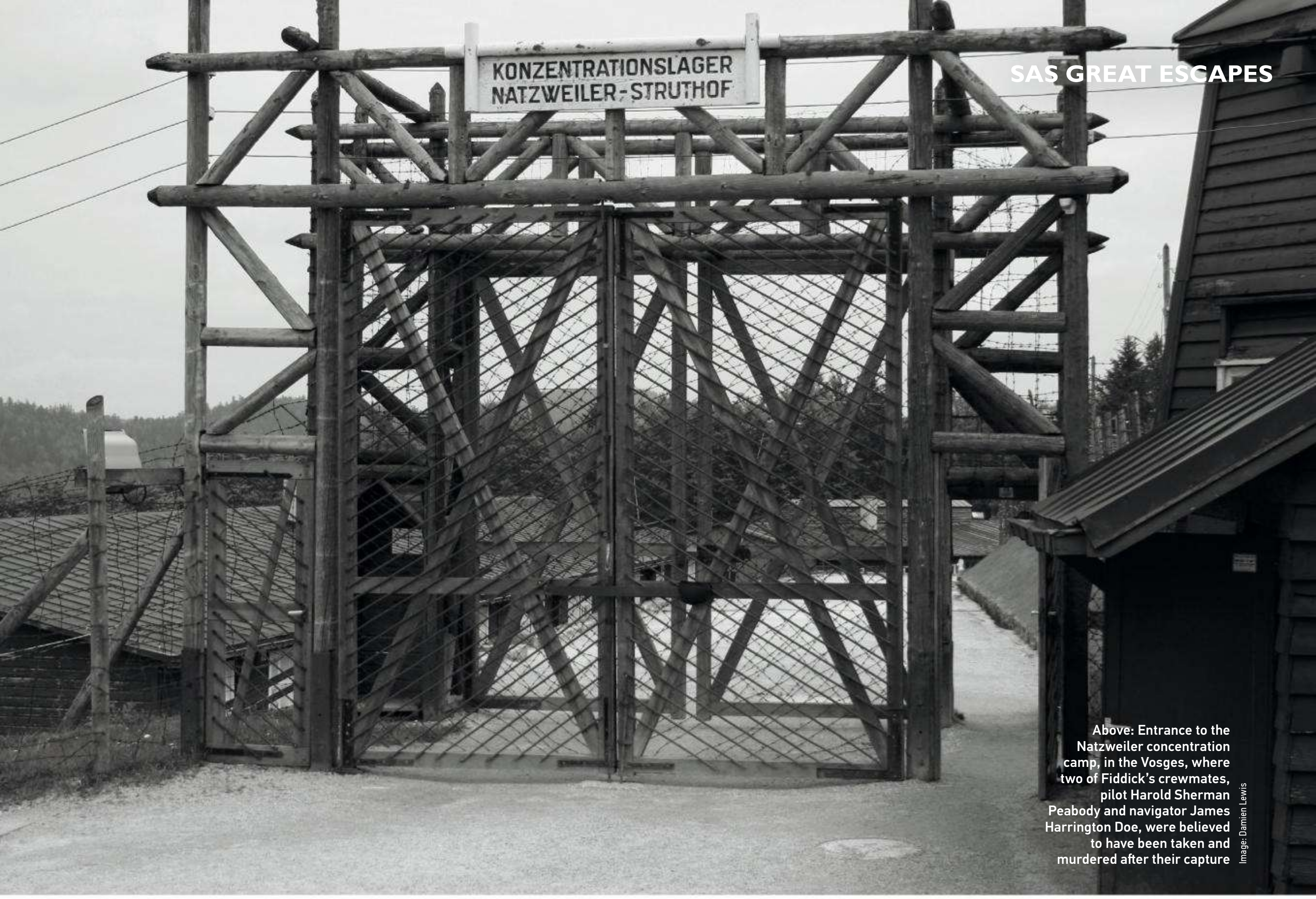
Image: Alamy

Right: Lieutenant George Paterson of 11 Special Air Service Brigade parachuted into Italy in February 1941 on the first ever airborne operation by Allied forces. Tough, daring and audacious in the extreme, Operation Colossus would end with all being taken captive

Image: Damien Lewis

Right: Paterson (rear centre) had been nicknamed 'The Big Canadian' for obvious reasons. From the moment of his capture (here shown at Italy's Sulmona POW camp, November 1941) Paterson never ceased his efforts to break out

Image: Damien Lewis



Above: Entrance to the Natzweiler concentration camp, in the Vosges, where two of Fiddick's crewmates, pilot Harold Sherman Peabody and navigator James Harrington Doe, were believed to have been taken and murdered after their capture

Image: Damien Lewis

VOSGES MOUNTAINS, FRANCE, JULY 1944

Following the Normandy landings in June 1944, Allied forces thrust south and east, determined to drive all opposition before them. But in the Vosges Mountains, on the French border with Germany, Hitler ordered his senior commander to make a desperate stand. No effort was to be spared to prevent the Allies from marching into the Fatherland.

On 28 July 1944, a total of 1,142 RAF bombers set off from bases across Britain, with a mission to hit Nazi Germany's key infrastructure. Among the thousands of brave Allied bomber crew was 27-year-old Canadian flying officer Ronald Lewis 'Lew' Fiddick, part of a seven-man crew tasked to destroy Stuttgart's main rail hub. Fiddick, that night's bomb-aimer, lay prone on the floor of the nose of the Lancaster – L-7567, nicknamed 'K for King' - which was about to complete its 99th sortie.

As the dense forests of the Vosges Mountains came into view, the rear gunner was the first to spot a German Junkers Ju 88 night-fighter in hot pursuit. The Lancaster pilot threw the aircraft into a corkscrew descent, diving to escape the enemy fire, but a burst of tracer ripped into the rear of the Lancaster's fuselage destroying the tail controls.

As the Lancaster was raked by further bursts of fire, it was time to bail out. Fiddick was determined to stay and help the rest of the aircrew, but moments later an almighty jolt catapulted him straight through the escape hatch set in the aircraft's nose. Triggering his parachute, Fiddick landed in thick forest and slithered to the ground.

Below: Ronald Lewis 'Lew' Fiddick (left) together with 20-year-old pilot Harold Sherman Peabody (right) and 22-year-old navigator James Harrington Doe (centre), fellow aircrew from the RAF's 622 Squadron

Image: Damien Lewis

Alone, unarmed and in hostile territory he was so stunned at what had transpired he remained where he was until morning, when he discovered that one of his knees was injured and that he'd lost his boots in the fall.

Making his way barefoot through the trees, Fiddick hid for two days, before finding shelter in a barn. But the following day local villagers discovered him. Luckily, they were friendly to the Allied cause. They alerted the Resistance, who helped Fiddick reach their headquarters, set deep in the forest.

On the 13 August 1944, Fiddick learned that British paratroopers had landed nearby. It turned out to be an advance party of the SAS, engaged on reconnaissance for a far larger mission, codenamed Operation Loyton. This was a major SAS undertaking, which aimed to hit enemy road and rail communications deep behind the lines, giving the impression that Allied forces were breaking through the Vosges defences.

Fiddick was introduced to 23-year-old Captain Henry Druce, the commander of the advance party. Previously seconded to the SOE, Druce had assisted downed Allied airmen in Nazi-occupied-Europe, until his cover was blown, forcing him to cross hundreds of miles of hostile territory to reach England. There, he met by chance senior SAS commander, Lieutenant Colonel Brian Franks, who asked him to join their ranks.

Druce recognised a like-minded soul in the gutsy Canadian airman, and invited him to join the SAS patrol – at that moment just 12-strong. If nothing else, his help should prove invaluable in forging a good relationship with the Resistance.

Shortly, Druce and his men were alerted to the presence of thousands of German troops, including Gestapo and Einsatzgruppen – paramilitary 'death squads' – combing the surrounding forests in an effort to find the 'British parachutists' and wipe them out.

With the enemy drawing close, Druce ordered everyone to move out. After hours of hard marching, the SAS stumbled upon a German patrol taking a rest break, which led to a fierce fire-fight. As enemy machine guns chewed their way through vegetation, an SAS trooper returned

Above: The men of RAF 622 Squadron gathered before one of the four-engine 'heavies'. When Fiddick was forced to bail out of crippled Lancaster L7576 in July 1944 he managed to link up with an SAS unit deep in France and was recruited on the spot

Image: Damien Lewis

fire with his Sten, but was immediately cut down. Heavily outnumbered and outgunned, Druce ordered his men to split up and head for an agreed emergency rendezvous.

Five days later, Druce tallied the losses: two dead and the survivors left without radios, ammo, explosives and food. A desperate situation was turned around on 1 September 1944, when Colonel Franks himself parachuted in with reinforcements and supplies. On meeting the Canadian airman serving with Druce, Franks, who had led specialist reconnaissance operations in the Middle East earlier in the war, formally invited Fiddick into the ranks of the SAS.

With Franks at the helm, and with a force of 80 SAS on the ground, a new basecamp was established high in the mountains. From there, the Operation Loyton raiders launched bold hit-and-run missions, creating mayhem among enemy forces, while at the same time gathering intelligence from the locals. Franks split his men into smaller groups, sticking to the wild off-beaten tracks, as the hunt intensified. Icy rain and a lack of cold-weather gear added to their difficulties, but with the enemy on their tail they were forced to keep moving.

At this point, Franks decided it was time to draw on the SAS's reputation for audacious nerve. The prior success of the Regiment across the Middle East had been down to fast 'shoot and scoot' operations executed in heavily armed Willys Jeeps. If those vehicles could be parachuted into the Vosges, the men could ambush German staff cars and their high-ranking officers, and 'cut the head off the Nazi snake'.

With six jeeps dropped in, Franks led a force of 21 fighters on the first raid on 22 September 1944. Among others, Fiddick and Druce lay in wait, their vehicles bristling with Vickers machine guns. Their patience was rewarded. Around the distant bend, not one but three gleaming Wehrmacht staff cars emerged, followed by a three-tonne German Army truck full of escorting soldiers.

Holding their fire until the very last moment, the twin-muzzles of the Vickers ripped through the sleek bodywork of the staff cars before targeting the truck. As more of the convoy emerged, the SAS broke off the attack, the unwieldy trucks being no match for the nimble jeeps.

Stunned by the attack, the enemy set out for revenge. Failing to find the SAS raiders, they accused the villagers of Moussey of assisting them. Some 210 men aged 16 to 60 were deported to the concentration camps. Only a few dozen survivors would ever return. Despite this, members of the Resistance continued to risk their lives to bring the SAS vital intelligence.

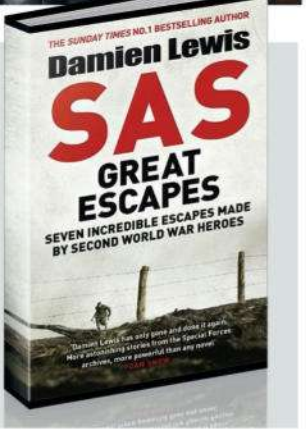
"UPON SEEING THE TWO SAS FUGITIVES' TOMMY GUNS AND THEIR RESOLVE, THE MILITIAMEN BACKED OFF"

Due to their efforts, Colonel Franks obtained priceless documents delineating the 21st Panzer Division's order of battle and positions. In the right hands, such intelligence would give the Allies the chance to hit Nazi Germany's key defences here in the Vosges. Franks had to get these to US General George Patton's forces, who were even then preparing a fresh assault on the enemy in the Vosges.

To do so would entail crossing the heavily defended German and Allied lines – a daunting proposition. Fortunately, Franks knew just the man for the job: Captain Henry Carey Druce. Requesting a volunteer, Canadian flier and honorary SAS man Lew Fiddick offered to accompany him.

Below: WWII SAS veteran Jack Mann, with French parachutists, in the Vosges in 2017. Every year a joint Anglo-French memorial service is held to commemorate the sacrifice of those SAS lost on Operation Loyton, plus the hundreds of French civilians who also perished

Image: Damien Lewis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On 29 September, the two men set off across enemy territory to reach American lines. The following evening, they arrived on the outskirts of the village of Saint-Prayel, location of the only bridge over the River Meurthe, on the far side of which lay the frontline. Waiting for darkness and using the cover of buildings and trees, they stole through the village but were challenged by members of the French Fascist militia – the Milice Francaise. But upon seeing the two SAS fugitives' Tommy guns and their resolve, the militiamen backed off, leaving Druce and Fiddick free to continue their journey.

Before long they found themselves in a dark German trench with patrols on every side. Making their way to the last trench they came to a barren stretch of terrain ripped apart by explosions. Fearful of being spotted by the enemy or accidentally detonating a landmine, they crawled across the blasted earth.

At first light, they discovered they'd reached a section of Allied front held by the 1st Spahis, part of the Free French forces under General de Gaulle. With identities confirmed, Druce and Fiddick were taken to American HQ where Druce finally handed over the precious documents.

With Fiddick's epic escape, his behind-the-lines adventures had come to an end, but not so Druce. Armed with the knowledge of General Patton's impending offensive, Druce set off back along the perilous journey to re-join Colonel Franks. When he arrived, he found the SAS camp deserted and Moussey village swarming with German troops.

A Resistance member warned Druce that following an attack by the enemy, Franks and his group had split into small parties to make their way back to Allied lines. Druce had no option but to follow their example. For the third time, he crossed back through enemy lines, bringing more intelligence to Allied forces.

Druce would be awarded a Distinguished Service Order (DSO) for his extraordinary achievements, while Fiddick would spend the rest of the war training new bomber crews before returning to civilian life in Canada.

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CHARLES H. COOLIDGE

In the autumn of 1944, in the Vosges Mountains of eastern France, this Technical Sergeant led an outnumbered group of GIs who stood their ground against repeated German attacks

WORDS **MICHAEL E. HASKEW**

The pair of Nazi tanks rumbled forward and lurched to a halt. Cautiously opening his hatch, the commander of the nearest armoured vehicle emerged and shouted in perfect English, "Do you guys want to give up?"

A scant 50 feet away, Technical Sergeant Charles H. Coolidge, a hardened combat veteran at the age of 23, replied without hesitation, "I'm sorry, Mac. You've got to come and get me."

The response was borne much more of grim determination than bravado. This was the fourth day that a small, beleaguered contingent of American soldiers had held onto precious high ground in the Vosges Mountains of eastern France amid miserable rain and cold and repeated German attempts to dislodge them from the position that guarded the extreme right flank of the 3rd Battalion, 141st Infantry Regiment, 36th Division.

Coolidge had joined comrades of Company M, 3rd Battalion in April 1943, just before deployment to North Africa. The 36th 'Texas' Infantry Division, a pre-war component of the Texas National Guard, was populated primarily with soldiers from the Lone Star state. Coolidge was a Tennessean, but his leadership and personal heroism had already demonstrated without doubt that he was more than worthy of being counted among them. He had landed with them in Italy, endured the harrowing effort to cross the Rapido River in January 1944, and fought the tenacious German defenders in the vicinity of Monte Cassino and the bloody Anzio beachhead that spring.

On 31 May 1944, Coolidge earned a Silver Star as he led a machine-gun section in action while supporting a rifle company near the town of Velletri, Italy. Moving to within 25 yards of the enemy, the machine-gunners used free traverse to devastating effect, killing and wounding many while scooping up prisoners as well during the reduction of a German strong point.

By autumn, the soldiers of the 36th Division had participated in their third amphibious landing, Operation Dragoon, on the shores of southern France. They had fought their way into the rugged, heavily wooded Vosges, approaching the frontier with Germany and the fortifications of the Siegfried Line, or West Wall, that guarded the boundary. On 24 October, the 3rd Battalion had taken up positions near the tactically vital Hill 623. Coolidge was ordered to take a machine-gun section along with a platoon of infantrymen from Company L to occupy the hill, near the village of Belmont-sur-Buttant, and hold against any German attempt to push them off. Altogether, he had fewer than 30 men, and most of them were 'green' replacements who had yet to fire a shot in anger.

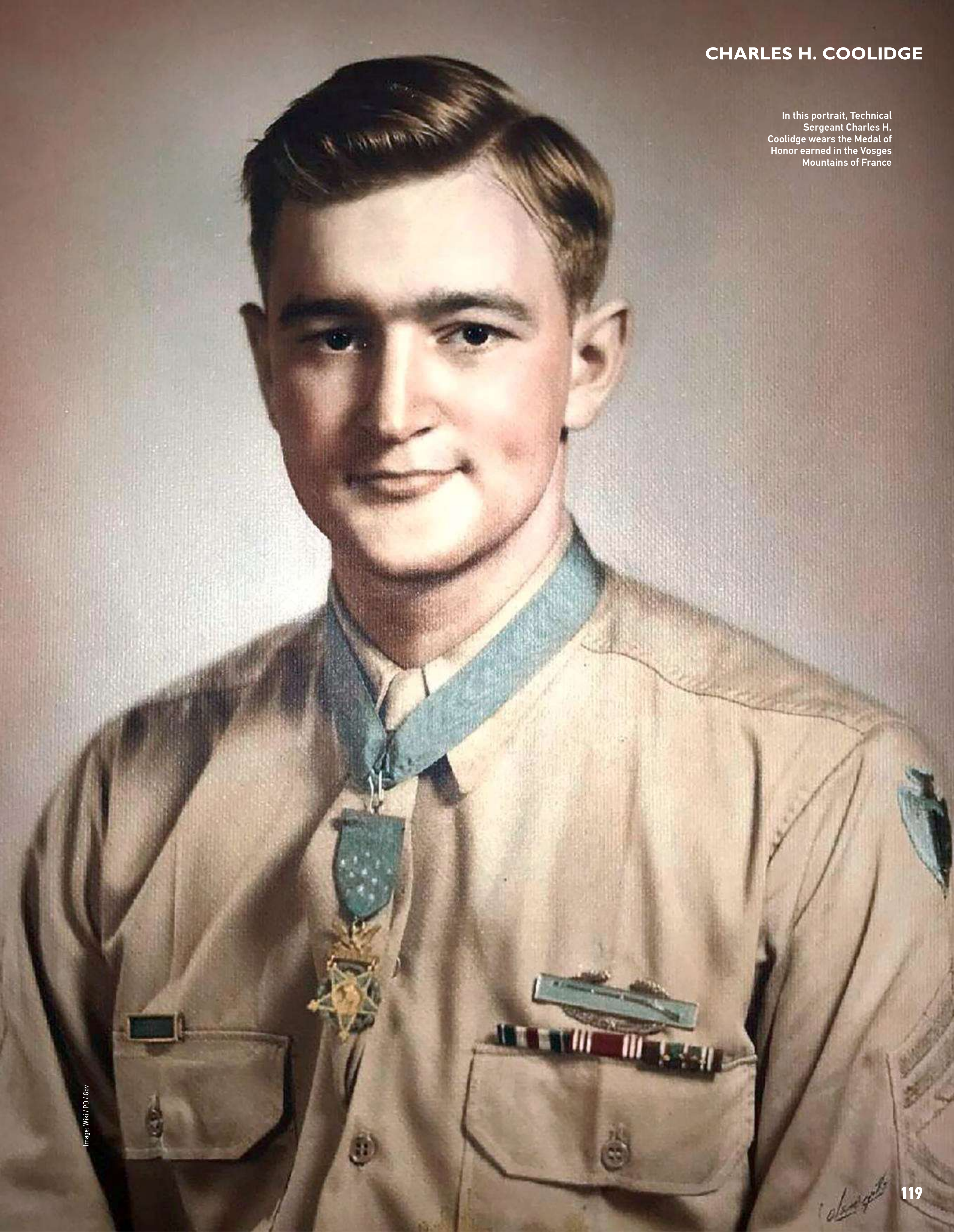
> "ALL FREE PEOPLE MOURN THE LOSS OF THIS GREAT MAN. HE, ALONG WITH HIS FELLOW SERVICE MEMBERS, SAVED OUR REPUBLIC DURING WORLD WAR II. MAY HE REST IN ETERNAL PEACE. HE EARNED IT"
>
> *- General B.B. Bell, Charles H. Coolidge National Medal of Honor Heritage Center national advisory board*

While his men were setting up a pair of machine guns, the unmistakable sound of approaching enemy soldiers made Coolidge pause for a moment. He turned to his friend and fellow veteran Sergeant, George Ferguson, a native of the Bronx, New York, who was fluent in German. "George," he whispered, "ask them if they want to give up."

Peering through the mist, Coolidge watched as the Germans, probably in company strength, approached to a mere 40 feet from his exposed position. He hoped that the bluff would work, but in seconds the answer came. "He [Ferguson] started talking to them, and all at once I saw one of the Germans behind a tree getting ready to shoot George. I took my carbine and shot him – and then shot another one."

The pair began to slip away just as a German bullet slapped into Ferguson's arm. Coolidge dragged his wounded friend to an aid station, and then rushed to his men, dug in on the slope

CHARLES H. COOLIDGE



In this portrait, Technical Sergeant Charles H. Coolidge wears the Medal of Honor earned in the Vosges Mountains of France

Image: Wiki / PD / Gov

of Hill 623. Without immediate support, Coolidge knew that his handful of defenders were in dire straights. Nevertheless, he steadied them as best he could, moving among the foxholes and pointing at clusters of enemy troops, encouraging and motivating his men to maintain their composure.

Coolidge never wavered, and earned the Medal of Honor during the desperate fight on Hill 623. His citation reads in part: "Many of the men were replacements recently arrived; this was their first experience under fire. TSgt. Coolidge, unmindful of the enemy fire delivered at close range, walked along the position calming and encouraging his men and directing their fire."

For more than 72 hours, the German attacks ebbed and flowed, and Coolidge was a constant presence among the young defenders. He expected that the Germans might bring tanks forward, possibly a heavy Tiger with its dreaded 88mm cannon, to assault Hill 623, and he knew that there were few weapons available to counter enemy armour. Nevertheless, the determined Americans held their position against at least half a dozen assaults, and ammunition ran low.

On 27 October, Coolidge heard the ominous rumble of enemy tanks. Staff Sergeant Clarence B. Hawkins, leading a rifle squad, could not believe his eyes. "The situation was desperate. Sergeant Coolidge saw there was at least a company of Germans and something had to be done. He stepped in front of us and walked right at the Germans, yelling to them to surrender. You'd think he had an army behind him."

Years later, Coolidge remembered, "I can still see him doing it" as the German tanker "unbuttoned" his hatch to deliver the cold ultimatum. After declining the German's overture, Coolidge scrambled for cover. "He put the turret of that tank down. He turned that 88 right where I'd been standing, and he fired point blank."

The German tank fired four more times as Coolidge evaded shrapnel and splinters from the smashed trees. A shard of hot steel cut through the leather top of his GI boot, but he remained unhurt. "When a shot went one way, I went the other," he recalled.

Coolidge found a shoulder-fired bazooka, the heaviest available anti-tank weapon, but it was inoperable, since the batteries had been removed from the firing mechanism. Tossing the bazooka aside, he gathered as many hand grenades as he could carry. While his men fell back grudgingly, Coolidge crawled toward the oncoming Germans, hoping to buy time.

Back home in Signal Mountain, Tennessee, near the city of Chattanooga, Technical Sergeant Coolidge was known as an accomplished softball

During a ceremony in Germany, Technical Sergeant Charles H. Coolidge receives the Medal of Honor from Lieutenant General Wade Haislip

"TSGT. COOLIDGE, DISPLAYING GREAT COOLNESS AND COURAGE, DIRECTED AND CONDUCTED AN ORDERLY WITHDRAWAL, BEING HIMSELF THE LAST TO LEAVE THE POSITION"

- Medal of Honor citation

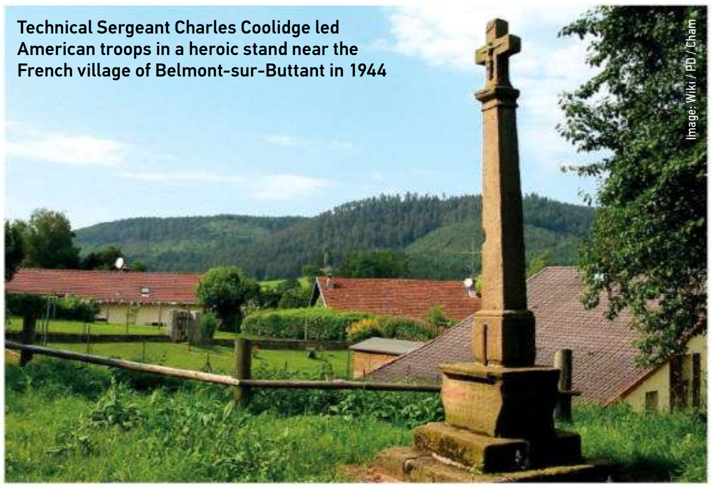
Image: Wiki / PD / Gov

Soldiers of the US 36th Infantry Division come ashore in Italy in 1943. They later landed in southern France

Image: Wiki / PD / Gov

World War II Medal of Honor recipient Charles Coolidge is greeted in this 2014 photo

Image: Wiki / PD / Gov



Technical Sergeant Charles Coolidge led American troops in a heroic stand near the French village of Belmont-sur-Buttant in 1944

Image: Wiki / PD / Cham

pitcher. That day in the Vosges, he put the skill to work with lethal results. Tossing as many as 70 grenades, he killed at least 20 German soldiers, and was the last defender to withdraw from the position. Incredibly, no American life was lost during the ordeal, and the integrity of the 3rd Battalion line was maintained. Coolidge, already in combat areas for 14 months, stayed with his soldiers through the end of the war in May 1945.

In one of the few such ceremonies conducted in Europe, Coolidge received his country's highest decoration for bravery under fire at a bombed-out airfield near Dornstadt, Germany, on 18 June 1945. Lieutenant General Wade H. Haislip, commander of the US Seventh Army, presented him with the Medal of Honor.

After the war, Coolidge returned home and worked briefly for the Veterans Administration, before rejoining the family business, Chattanooga Printing & Engraving, where he had been a bookbinder prior to entering the service. He married Frances Seepe in 1945 and raised three children. Their son, Charles Coolidge Jr, rose to the rank of lieutenant general in the US Air Force. Although he suffered from multiple sclerosis for the last 50 years of his life, Sergeant Coolidge was a vibrant presence in the Chattanooga area throughout. Always humble and soft spoken, he addressed many school and civic groups, telling them that in combat, "…there are a lot of people scared to death, especially if you're a replacement…" and frankly asserting, "There's no glory in the infantry."

A Chattanooga area highway and park have been named for the hero, as well as the Charles H. Coolidge National Medal of Honor Heritage Center, which opened its doors in February 2020. When the US Postal Service unveiled its 'World War II Medal of Honor Forever Stamp' packet in November 2013, Coolidge was the first of 12 recipients whose portraits appeared on the cover sheet.

Prior to his death on 6 April 2021 at the age of 99, Coolidge was the oldest living recipient of the Medal of Honor, the last remaining recipient from the European Theater of Operations, and the last to have received his medal prior to the end of World War II. Hundreds of citizens lined the streets of Chattanooga as his funeral procession made its way to the city's national cemetery, where he was buried with full military honours.

A short distance from Coolidge's final resting place lie the first ever recipients of the Medal of Honor, participants in the 1862 Great Locomotive Chase during the American Civil War.

Vernon Baker initially wanted to serve in the Quartermaster Corps but was instead assigned to the Infantry

When awarded the Medal of Honor, Baker recognised the valour of those who had not lived to receive their own medals

VERNON BAKER: MEDAL OF HONOR

Sometimes a soldier's valour is recognised immediately – for Vernon Baker it would take 50 years for him to be properly rewarded for his heroics

WORDS **BEN GAZUR**

Vernon Baker had to persevere to be allowed to fight in the Second World War. When he first tried to enlist in the United States Army in 1941, he was turned away with the words, "We don't have any quotas for you people." Baker was a Black man who wanted to serve his nation, even if they were not overly enthusiastic about his help.

When he was finally allowed to join the army, Baker was assigned to the 370th Infantry and sent to Naples in 1944. Soon after, he was wounded in the arm but returned to action two months later. With his company, he was sent to the German-controlled stronghold of Castle Aghinolfi on 5 April.

Baker and 25 men of his company advanced towards the castle to reconnoitre and find locations to set up machine guns. While there, Baker spotted a concealed slit on a hill. He stealthily approached and fired his rifle into the opening, killing the two Germans inside what turned out to be an observation post. While returning to his men, he stumbled into a hidden machine gun nest and surprised the German soldiers inside while they were eating their breakfast. Baker shot and killed them.

Later that day, Baker assaulted a German dugout using a hand grenade to blast a hole in it and shooting the soldiers who emerged. Under withering German gunfire, 19 out of the 25 men with Baker were killed. Baker recalled, "My men wanted to stay, but I wanted to ensure some of them stayed alive." He covered the withdrawal of two groups of American soldiers and destroyed two more machine gun emplacements. For his outstanding heroism in this fight, Baker was awarded the Distinguished Service Cross, the second-highest award in the United States Military.

In the 1990s it became obvious that despite records of exceptional heroism in the face of enemy assault, several Black soldiers had not even been considered for the highest honour, the Medal of Honor, during the Second World War. A study commissioned by the army determined there were ten cases that should be re-examined. Baker's name was put forward to receive the Medal of Honor, along with six others who had been racially discriminated against.

On 13 January 1997, US president Bill Clinton awarded the Medal of Honor to Baker in a ceremony at the White House. Vernon Baker was the only living member of the overlooked soldiers still living to receive his medal at the ceremony.

It would be more than 50 years after his acts of heroism that Vernon Baker would receive the Medal of Honor

Image: Getty Images, Alamy, Wikimedia Commons

Lachhiman Gurung always proudly wore the medals he earned for his heroic exploits, including the Victoria Cross

Armed with just his kukri and rifle, Lachhiman Gurung faced over 200 Japanese soldiers alone after his colleagues were wounded

The Victoria Cross is the highest honour given by the British Army, and is awarded for conspicuous bravery in the face of the enemy

LACHHIMAN GURUNG: A ONE-MAN ARMY

The Gurkhas were noted for their tireless fighting, even in the face of overwhelming enemy numbers

WORDS **BEN GAZUR**

In normal times, Lachhiman Gurung would not have been able to serve in the Indian Army. Standing just four feet 11 inches tall, he did not meet the minimum height requirements for military service. But in 1940, with the Second World War raging, these rules were waived and Gurung joined the 4th Battalion, 8th Gurkha Rifles.

Gurung fought against the Japanese in Burma. When Japanese forces attempted to withdraw from the Irrawaddy River, Gurung's battalion was sent to block their retreat. The Gurkha force was then surrounded by the Japanese and trenches were dug to defend their position. On 13 May 1945, Gurung and two fellow soldiers found their trench under attack by at least 200 Japanese fighters.

The Japanese threw grenades into the trench. Gurung was able to successfully throw the first two explosives out of harm's way but while attempting to get rid of a third, it exploded in his hand. He lost the fingers of his right hand, shattered the bones of his arm and suffered wounds along the right side of his body. His colleagues were badly hurt and unable to fight.

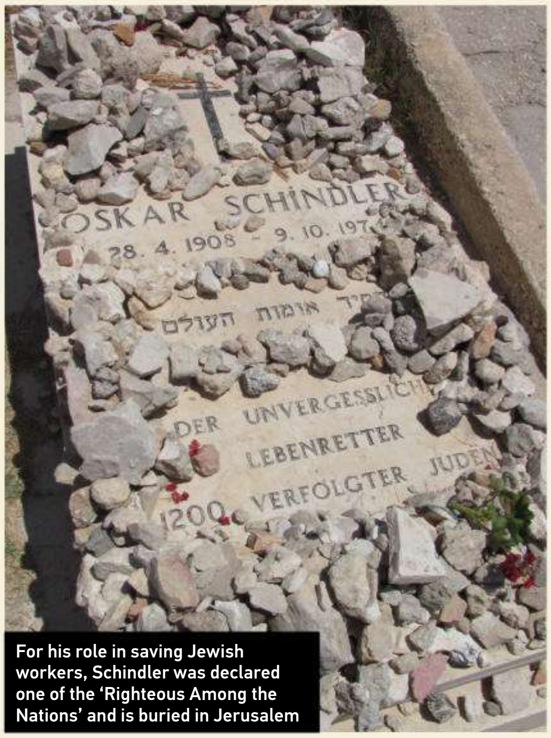
The Japanese then tried to rush Gurung's position. Gurung, however, drew his kukri knife and plunged it into the soil in front of his trench and dared the Japanese to come and take him on. In the face of this attack, and with just his left hand, Gurung fired repeatedly into the oncoming enemy force. He yelled, "Come and fight a Gurkha!"

The Japanese did come. For four hours, Gurung held his position alone against them. Whenever a Japanese soldier approached, he fired his rifle. By the time his position was relieved, 31 Japanese soldiers lay dead in front of Gurung. The badly wounded soldier was taken to hospital to treat his grievous injuries. The Japanese failed to capture the Gurkhas' position and had to fall back.

Gurung was awarded the Victoria Cross for his valorous actions and was presented with it by Lord Mountbatten at a parade. He was one of the 13 Nepalese Gurkhas who earned this medal during the Second World War. Despite losing his right hand and the sight in his right eye, Gurung continued to serve.

He returned to his village in Nepal after leaving the army in 1947 and became a farmer. He remained active in the struggle to secure the rights of Gurkha soldiers until the end of his life. He died in 2010, at the age of 92.

Image: Alamy, Wikimedia Commons


OSKAR SCHINDLER
28. 4. 1908 – 9. 10. 197
אומות העולם
DER UNVERGESSLICH
LEBENRETTER
1200 VERFOLGTER JUDEN

For his role in saving Jewish workers, Schindler was declared one of the 'Righteous Among the Nations' and is buried in Jerusalem

After the war, Schindler was invited to Israel to meet some of those who he had saved from the Holocaust

Oskar Schindler was never a successful businessman, but one of his companies managed to save hundreds of people from extermination

OSKAR SCHINDLER: THE PLAYBOY SAVIOUR

Oskar Schindler's life offered no clues that he would one day be hailed as a hero who saved hundreds of lives

WORDS **BEN GAZUR**

Oskar Schindler was born in the Austro-Hungarian Empire, in what is the modern Czech Republic. Following the break-up of the Empire, his family became one of the ethnic German groups who lived in the Sudetenland, an area in Czechoslovakia which some Germans considered 'theirs'.

Schindler's early life was one of dissipation. He was expelled from his school for forging better grades on a report card. He never settled on any single career. He married when 20 years old but had several affairs. Schindler was also arrested several times due to public intoxication.

In 1935, Schindler had joined a pro-Nazi political party, the Sudeten German Party. A year later, he began to deliver intelligence to the Nazi intelligence agency, the Abwehr, on Czech military strength. When later questioned, he declared he needed the money the Abwehr had been able to pay him. In 1939, he was arrested for espionage and would have faced the death penalty – had the Nazis not invaded the Sudetenland. Schindler joined the Nazi Party and continued to work for the Abwehr.

Schindler moved to Krakow in 1939 and, despite his Nazi ties, struck up friendships with several Jewish Poles. With the backing of Jewish investors, Schindler bought an enamel work factory. At first, he hired Jewish workers because, under Nazi rule, they were only paid minimal wages. But throughout the war, Schindler hired Jewish workers and treated them kindly, losing money as he provided them with the necessities of life. To ensure the safety of his workers, he bribed Nazi officials.

When Nazi agents tried to deport his workers to concentration camps, Schindler found ways to protect them. Even his alcoholic tendencies came to be a benefit as he would get those who came to investigate so drunk they forgot their tasks. Schindler also worked to get money to the Jewish underground. He helped hundreds of his workers avoid the violence of the liquidation of the Jewish Ghetto in Krakow.

At the end of the war, it was estimated that Schindler's actions had saved 1,200 Jewish people from death. The rest of his life was one of financial hardship but for one glorious moment, Oskar Schindler had been more than a playboy.

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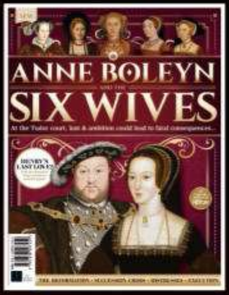
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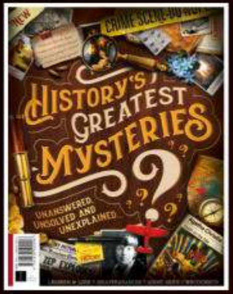
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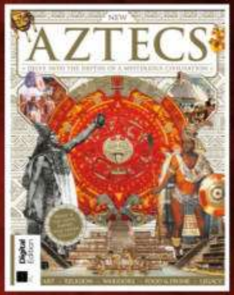

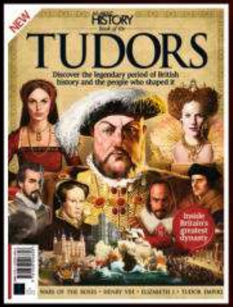
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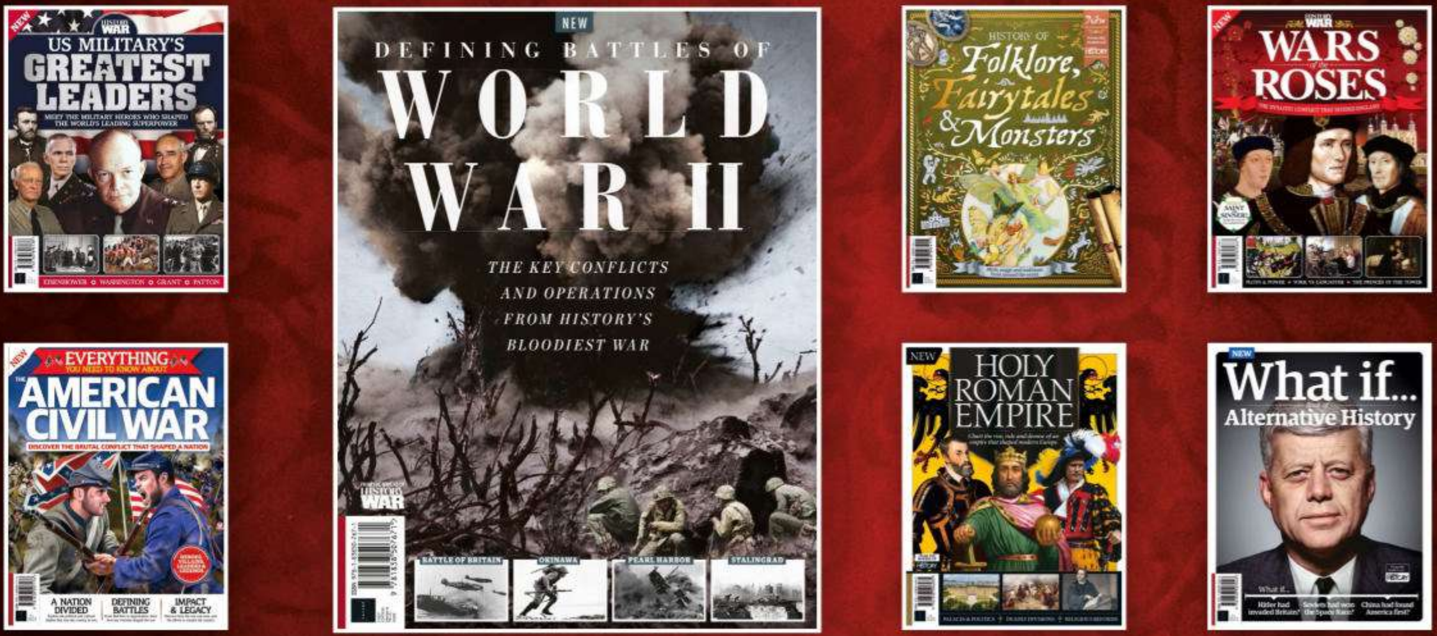
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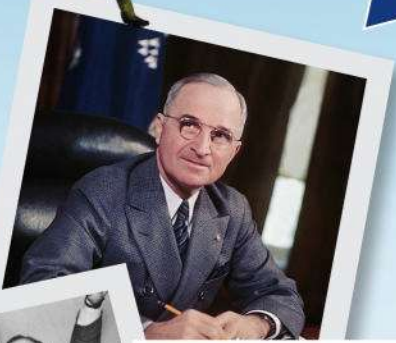

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